

SEQUENCE LISTING

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Geoff Hazlewood
Nelson Barton
David Lam

<120> PHOSPHOLIPASES, NUCLEIC ACIDS ENCODING THEM
AND METHODS FOR MAKING AND USING THEM

<130> 564462004220

<150> 10/421,654

<151> 2003-04-21

<150> 60/374,313

<151> 2002-04-19

<160> 140

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 849

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 1

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gaggataagc	ataatgaggg	gattaactct	catttggtgga	ttgtaaatcg	tgcaattgac	180
atcatgtctc	gtaatacaac	gattgtgaat	ccgaatgaaa	ctgcattatt	aaatgagtgg	240
cgtgctgatt	tagaaaatgg	tatttattct	gctgattacg	agaatcctta	ttatgataat	300
agtacatatg	cttctcactt	ttatgatccg	gatactggaa	caacatatat	tccttttgcg	360
aaacatgcaa	aagaaacagg	cgcaaaatat	tttaaccttg	ctggtcaagc	ataccaaaat	420
caagatatgc	agcaagcatt	cttctactta	ggattatcgc	ttcattattt	aggagatgtg	480
aatcagccaa	tgcatgcagc	aaactttacg	aatctttctt	atccaatggg	tttccattct	540
aaatacgaaa	attttgttga	tacaataaaa	aataactata	ttgtttcaga	tagcaatgga	600
tatttgaatt	ggaaaggagc	aaaccagaa	gattggattg	aaggagcagc	ggtagcagct	660
aaacaagatt	atcctggcgt	tgtgaacgat	acgacaaaag	attggtttgt	aaaagcagcc	720
gtatctcaag	aatatgcaga	taaatggcgt	gcggaagtaa	caccggtgac	aggaaagcgt	780
ttaatggaag	cgcagcgcgt	tacagctggt	tatattcatt	tgtggtttga	tacgtatgta	840
aatcgctaa						849

<210> 2

<211> 282

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<221> SIGNAL

<222> (1)...(24)

<400> 2

Met	Lys	Lys	Lys	Val	Leu	Ala	Leu	Ala	Ala	Met	Val	Ala	Leu	Ala	Ala
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Pro	Val	Gln	Ser	Val	Val	Phe	Ala	Gln	Thr	Asn	Asn	Ser	Glu	Ser	Pro
		20						25					30		
Ala	Pro	Ile	Leu	Arg	Trp	Ser	Ala	Glu	Asp	Lys	His	Asn	Glu	Gly	Ile
		35					40					45			
Asn	Ser	His	Leu	Trp	Ile	Val	Asn	Arg	Ala	Ile	Asp	Ile	Met	Ser	Arg
	50					55					60				
Asn	Thr	Thr	Ile	Val	Asn	Pro	Asn	Glu	Thr	Ala	Leu	Leu	Asn	Glu	Trp
65				70						75					80
Arg	Ala	Asp	Leu	Glu	Asn	Gly	Ile	Tyr	Ser	Ala	Asp	Tyr	Glu	Asn	Pro
			85						90					95	
Tyr	Tyr	Asp	Asn	Ser	Thr	Tyr	Ala	Ser	His	Phe	Tyr	Asp	Pro	Asp	Thr
			100					105					110		
Gly	Thr	Thr	Tyr	Ile	Pro	Phe	Ala	Lys	His	Ala	Lys	Glu	Thr	Gly	Ala
		115					120					125			
Lys	Tyr	Phe	Asn	Leu	Ala	Gly	Gln	Ala	Tyr	Gln	Asn	Gln	Asp	Met	Gln
	130					135					140				
Gln	Ala	Phe	Phe	Tyr	Leu	Gly	Leu	Ser	Leu	His	Tyr	Leu	Gly	Asp	Val
145					150					155					160
Asn	Gln	Pro	Met	His	Ala	Ala	Asn	Phe	Thr	Asn	Leu	Ser	Tyr	Pro	Met
			165						170					175	
Gly	Phe	His	Ser	Lys	Tyr	Glu	Asn	Phe	Val	Asp	Thr	Ile	Lys	Asn	Asn
		180						185					190		
Tyr	Ile	Val	Ser	Asp	Ser	Asn	Gly	Tyr	Trp	Asn	Trp	Lys	Gly	Ala	Asn
		195					200					205			
Pro	Glu	Asp	Trp	Ile	Glu	Gly	Ala	Ala	Val	Ala	Ala	Lys	Gln	Asp	Tyr
	210					215					220				
Pro	Gly	Val	Val	Asn	Asp	Thr	Thr	Lys	Asp	Trp	Phe	Val	Lys	Ala	Ala
225					230					235					240
Val	Ser	Gln	Glu	Tyr	Ala	Asp	Lys	Trp	Arg	Ala	Glu	Val	Thr	Pro	Val
			245						250					255	
Thr	Gly	Lys	Arg	Leu	Met	Glu	Ala	Gln	Arg	Val	Thr	Ala	Gly	Tyr	Ile
		260						265					270		
His	Leu	Trp	Phe	Asp	Thr	Tyr	Val	Asn	Arg						
		275					280								

<210> 3
 <211> 852
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 3

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gaatctatac	ataatgaagg	agtaagttct	catttatgga	ttgtaaacag	agccattgat	180
attatgtccc	aaaatacgac	tggtgtgaag	caaaatgaga	cagctctatt	aaatgaatgg	240
cgtacggatc	tagagaaaag	catttactct	gcggattatg	aaaacccata	ctatgataat	300
tccacattcg	cttcacactt	ctatgatcct	gattcaggaa	aaacgtatat	tccatttgct	360
aaacaagcaa	agcaaacagg	agcgaaatat	tttaaattag	ctgggtgaagc	ttatcaaaat	420
aaagatctga	aaaacgcatt	cttttattta	ggattatcac	ttcactatct	aggggatgtc	480
aaccaaccaa	tgcatgcagc	aaactttact	aatatttcgc	atccatttgg	cttccactca	540
aaatatgaaa	atttcggttg	tacagtgaag	gacaattata	gagtaacgga	tggaatggc	600
tattggaatt	ggcaaatgac	aaatccagaa	gagtgggttc	atgcatcagc	atcagcagca	660
aaagctgatt	ttccatcaat	tgtaaatgat	aagacgaaaa	attggttcct	aaaagcagct	720

gtatcacaag actctgctga taaatggcgt gcagaagtaa caccgataac aggaaaacgt 780
 ttaatggaag cgcagcgtgt tacagctgga tatatccatt tatgggtttga tacgtacgtg 840
 aataacaaat aa 852

<210> 4
 <211> 283
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(24)

<400> 4
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 Pro Ile Gln Ser Val Ala Phe Ala His Glu Asn Gly His Gln Asp Pro
 20 25 30
 Pro Ile Ala Leu Lys Trp Ser Ala Glu Ser Ile His Asn Glu Gly Val
 35 40 45
 Ser Ser His Leu Trp Ile Val Asn Arg Ala Ile Asp Ile Met Ser Gln
 50 55 60
 Asn Thr Thr Val Val Lys Gln Asn Glu Thr Ala Leu Leu Asn Glu Trp
 65 70 75 80
 Arg Thr Asp Leu Glu Lys Gly Ile Tyr Ser Ala Asp Tyr Glu Asn Pro
 85 90 95
 Tyr Tyr Asp Asn Ser Thr Phe Ala Ser His Phe Tyr Asp Pro Asp Ser
 100 105 110
 Gly Lys Thr Tyr Ile Pro Phe Ala Lys Gln Ala Lys Gln Thr Gly Ala
 115 120 125
 Lys Tyr Phe Lys Leu Ala Gly Glu Ala Tyr Gln Asn Lys Asp Leu Lys
 130 135 140
 Asn Ala Phe Phe Tyr Leu Gly Leu Ser Leu His Tyr Leu Gly Asp Val
 145 150 155 160
 Asn Gln Pro Met His Ala Ala Asn Phe Thr Asn Ile Ser His Pro Phe
 165 170 175
 Gly Phe His Ser Lys Tyr Glu Asn Phe Val Asp Thr Val Lys Asp Asn
 180 185 190
 Tyr Arg Val Thr Asp Gly Asn Gly Tyr Trp Asn Trp Gln Ser Ala Asn
 195 200 205
 Pro Glu Glu Trp Val His Ala Ser Ala Ser Ala Ala Lys Ala Asp Phe
 210 215 220
 Pro Ser Ile Val Asn Asp Lys Thr Lys Asn Trp Phe Leu Lys Ala Ala
 225 230 235 240
 Val Ser Gln Asp Ser Ala Asp Lys Trp Arg Ala Glu Val Thr Pro Ile
 245 250 255
 Thr Gly Lys Arg Leu Met Glu Ala Gln Arg Val Thr Ala Gly Tyr Ile
 260 265 270
 His Leu Trp Phe Asp Thr Tyr Val Asn Asn Lys
 275 280

<210> 5
 <211> 843
 <212> DNA
 <213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 5

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cataatgaag gagtaagttc tcattttatgg attgtaaaca gagcaattga tattatgtcc    180
caaaatacga ctgtggtgaa gcaaaatgag acagctctat taaatgaatg gcgtacgaat    240
ttggaggaag gtattttattc tgcagattat aaaaacccat actatgataa ttccacattc    300
gcttcacact tctatgatcc tgattcagaa aaaacgtata ttccatttgc taaacaagca    360
aagcaaacgg gagcaaagta ttttaaatta gctggtgaag cttatcaaaa taaagatctg    420
aaaaatgcat tcttttattt aggattatca cttcattatt taggggatgt caatcaacca    480
atgcatgcag caaactttac taacatttcg catccatttg gcttccactc aaaatatgaa    540
aacttcggtg atacagtgaag agacaattat agagtaacag atggagatgg ctattggaat    600
tggaagaaagtg caaatccaga agagtgggtt catgcatcag catcagcagc aaaagctgat    660
ttcccatcaa ttgttaatga taatacgaag agttggttcc taaaagcagc ggtatcacia    720
gactctgctg acaaattggcg tgctgaagta acaccggtaa caggaaaacg tttaatggaa    780
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taa
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<210> 6

<211> 280

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<221> SIGNAL

<222> (1)...(24)

<400> 6

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Met Lys Arg Lys Ile Leu Ala Ile Ala Ser Val Ile Ala Leu Thr Ala
 1           5           10           15
Pro Ile Gln Ser Val Ala Phe Ala His Glu Ser Asp Gly Pro Ile Ala
          20           25           30
Leu Arg Trp Ser Ala Glu Ser Val His Asn Glu Gly Val Ser Ser His
          35           40           45
Leu Trp Ile Val Asn Arg Ala Ile Asp Ile Met Ser Gln Asn Thr Thr
          50           55           60
Val Val Lys Gln Asn Glu Thr Ala Leu Leu Asn Glu Trp Arg Thr Asn
65           70           75           80
Leu Glu Glu Gly Ile Tyr Ser Ala Asp Tyr Lys Asn Pro Tyr Tyr Asp
          85           90           95
Asn Ser Thr Phe Ala Ser His Phe Tyr Asp Pro Asp Ser Glu Lys Thr
          100          105          110
Tyr Ile Pro Phe Ala Lys Gln Ala Lys Gln Thr Gly Ala Lys Tyr Phe
          115          120          125
Lys Leu Ala Gly Glu Ala Tyr Gln Asn Lys Asp Leu Lys Asn Ala Phe
          130          135          140
Phe Tyr Leu Gly Leu Ser Leu His Tyr Leu Gly Asp Val Asn Gln Pro
145          150          155          160
Met His Ala Ala Asn Phe Thr Asn Ile Ser His Pro Phe Gly Phe His
          165          170          175
Ser Lys Tyr Glu Asn Phe Val Asp Thr Val Lys Asp Asn Tyr Arg Val
          180          185          190
Thr Asp Gly Asp Gly Tyr Trp Asn Trp Lys Ser Ala Asn Pro Glu Glu
          195          200          205
Trp Val His Ala Ser Ala Ser Ala Ala Lys Ala Asp Phe Pro Ser Ile
210          215          220
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Val Asn Asp Asn Thr Lys Ser Trp Phe Leu Lys Ala Ala Val Ser Gln
 225 230 235 240
 Asp Ser Ala Asp Lys Trp Arg Ala Glu Val Thr Pro Val Thr Gly Lys
 245 250 255
 Arg Leu Met Glu Ala Gln Arg Ile Thr Ala Gly Tyr Ile His Leu Trp
 260 265 270
 Phe Asp Thr Tyr Val Asn Asn Lys
 ..275 280

<210> 7
 <211> 963
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 7
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 ttcgtaccgc tgcagccatc acatgctact gaaaattatc caaatgattt taaactgttg 120
 caacataatg tatttttatt gcctgaatca gtttcttatt ggggtcagga cgaacgtgca 180
 gattatatga gtaatgcaga ttacttcaag ggacatgatg ctctgctctt aaatgagctt 240
 ttgacaatg gaaattcgaa catgctgcta atgaacttat ccacggaata tccatatcaa 300
 acgccagtgc ttggccgttc gatgagtgga tgggatgaaa ctagaggaag ctatttcta 360
 tttgtaccgc aagatggcgg tgtagcaatt atcagtaa atgcgaatcgt ggagaaaata 420
 cagcatgttt acgcgaatgg ttgcggtgca gactattatg caaataaagg atttgtttat 480
 gcaaaagtac aaaaagggga taaattctat catcttatca gcactcatgc tcaagccgaa 540
 gatactgggt gtgatcaggg tgaaggagca gaaattcgtc attcacagtt tcaagaaatc 600
 aacgacttta ttaaaaaata aaacattccg aaagatgaag tggatattat tgggtggtgac 660
 ttaaatgtga tgaagagtga cacaacagag tacaatagca tggtatcaac attaaatgtc 720
 aatgcgccta ccgaatatat agggcatagc tctacttggg acccagaaac gaacagcatt 780
 acaggttaca attaccctga ttatgcgcca cagcathtag attatatatt tgtggaaaaa 840
 gatcataaac aaccaagttc atgggtaaat gaaacgatta ctccgaagtc tccaacttgg 900
 aaggcaatct atgagtataa tgattattcc gatcactatc ctgttaaagc atacgtaaaa 960
 taa 963

<210> 8
 <211> 320
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(29)

<400> 8
 Met Ile Thr Leu Ile Lys Lys Cys Leu Leu Val Leu Thr Met Thr Leu
 1 5 10 15
 Leu Leu Gly Val Phe Val Pro Leu Gln Pro Ser His Ala Thr Glu Asn
 20 25 30
 Tyr Pro Asn Asp Phe Lys Leu Leu Gln His Asn Val Phe Leu Leu Pro
 35 40 45
 Glu Ser Val Ser Tyr Trp Gly Gln Asp Glu Arg Ala Asp Tyr Met Ser
 50 55 60
 Asn Ala Asp Tyr Phe Lys Gly His Asp Ala Leu Leu Asn Glu Leu
 65 70 75 80
 Phe Asp Asn Gly Asn Ser Asn Met Leu Leu Met Asn Leu Ser Thr Glu

<212> PRT
<213> Unknown

<220>
<223> Obtained from an environmental sample.

<221> SIGNAL
<222> (1)...(20)

<400> 10
Met Lys Leu Leu Arg Val Phe Val Cys Val Phe Ala Leu Leu Ser Ala
1 5 10 15
His Ser Lys Ala Asp Thr Leu Lys Val Met Ala Tyr Asn Ile Met Gln
20 25 30
Leu Asn Val Gln Asp Trp Asp Gln Ala Asn Arg Ala Gln Arg Leu Pro
35 40 45
Asn Val Ile Ser Gln Leu Ser Asp Ser Pro Asp Val Ile Leu Ile Ser
50 55 60
Glu Ala Phe Ser Ser Gln Ser Glu Ser Ala Leu Ala Gln Leu Ala Gln
65 70 75 80
Leu Tyr Pro Tyr Gln Thr Pro Asn Val Gly Glu Asp Cys Ser Gly Ala
85 90 95
Gly Trp Gln Ser Leu Thr Gly Asn Cys Ser Asn Ser Pro Phe Val Ile
100 105 110
Arg Gly Gly Val Val Ile Leu Ser Lys Tyr Pro Ile Ile Thr Gln Lys
115 120 125
Ala His Val Phe Asn Asn Ser Leu Thr Asp Ser Trp Asp Tyr Leu Ala
130 135 140
Asn Lys Gly Phe Ala Tyr Val Glu Ile Glu Lys His Gly Lys Arg Tyr
145 150 155 160
His Leu Ile Gly Thr His Leu Gln Ala Thr His Asp Gly Asp Thr Glu
165 170 175
Ala Glu His Ile Val Arg Met Gly Gln Leu Gln Glu Ile Gln Asp Phe
180 185 190
Ile Gln Ser Glu Gln Ile His Thr Ser Glu Pro Val Ile Ile Gly Gly
195 200 205
Asp Met Asn Val Glu Trp Ser Lys Gln Ser Glu Ile Thr Asp Met Leu
210 215 220
Glu Val Val Arg Ser Arg Leu Ile Phe Asn Thr Pro Glu Val Gly Ser
225 230 235 240
Phe Ser Ala Lys His Asn Trp Phe Thr Lys Ala Asn Ala Tyr Tyr Phe
245 250 255
Asp Tyr Ser Leu Glu Tyr Asn Asp Thr Leu Asp Tyr Val Leu Trp His
260 265 270
Ala Asp His Lys Gln Pro Thr Asn Thr Pro Glu Met Leu Val Arg Tyr
275 280 285
Pro Lys Ala Glu Arg Asp Phe Tyr Trp Arg Tyr Leu Arg Gly Asn Trp
290 295 300
Asn Leu Pro Ser Gly Arg Tyr Tyr His Asp Gly Tyr Tyr Asn Glu Leu
305 310 315 320
Ser Asp His Tyr Pro Val Gln Val Asn Phe Glu Phe
325 330

<210> 11
<211> 1041
<212> DNA
<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 11

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ggaacaagt	caggggctat	taacgctctc	atTTTTtctgc	tgggctttac	cattaaagag	180
cagcaggata	ttctcaattc	caccaacttc	agggagttta	tggacagctc	tttcggattt	240
gtgcgaaact	tcagaaggct	ctggagtga	ttcgggtgga	accgcggtga	tgtgttttcg	300
gagtgggcag	gagagctggt	gaaagagaaa	ctcggcaaga	agaacgccac	cttcggcgat	360
ctgaaaaaag	cgaagcgccc	cgatctctac	gttatcggaa	ccaacctctc	caccgggttt	420
tccgagactt	tttcgcatga	acgccacgcc	aacatgccgc	tgggtggatgc	ggtgcggatc	480
agcatgtcga	tcccgtctct	ttttgctggc	cgcagacttg	gcaaacgaag	cgatgtgtat	540
gtggatggag	gtgttatgct	caactaccgc	gtaaagctgt	tgcacaggga	gaaatacatc	600
gatttggaga	aggagaaaga	ggcagccgc	tacgtggagt	actacaatca	agagaatgcc	660
cggtttctgc	ttgagcggcc	cggccgaagc	ccgtacgttt	acaaccggca	gaccctaggc	720
ctgcggctcg	actcgcagga	agagatcggc	ctgttccgtt	acgatgagcc	gctgaagggc	780
aaacagatca	accgcttccc	cgaatatgcc	aaagccctga	tccgtgcact	gatgcagggtg	840
caggagaaca	tccacctgaa	aagcgacgac	tggcagcgaa	cgctctacat	caacacgctg	900
gatgtgggta	ccacagattt	cgacattaat	gacgagaaga	aaaaagtgtc	ggtgaatgag	960
ggaatcaagg	gagcggaaac	ctacttccgc	tggtttgagg	atcccgaagc	taaaccggtg	1020
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<210> 12

<211> 346

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 12

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Gly	Ile	Ala	Tyr	Ile	Gly	Ala	Met	Gln	Val	Leu	Glu	Gln	Arg	Gly	His
			20					25					30		
Leu	Glu	His	Val	Val	Arg	Val	Gly	Gly	Thr	Ser	Ala	Gly	Ala	Ile	Asn
			35				40					45			
Ala	Leu	Ile	Phe	Ser	Leu	Gly	Phe	Thr	Ile	Lys	Glu	Gln	Gln	Asp	Ile
	50					55					60				
Leu	Asn	Ser	Thr	Asn	Phe	Arg	Glu	Phe	Met	Asp	Ser	Ser	Phe	Gly	Phe
65					70				75						80
Val	Arg	Asn	Phe	Arg	Arg	Leu	Trp	Ser	Glu	Phe	Gly	Trp	Asn	Arg	Gly
				85					90					95	
Asp	Val	Phe	Ser	Glu	Trp	Ala	Gly	Glu	Leu	Val	Lys	Glu	Lys	Leu	Gly
			100				105					110			
Lys	Lys	Asn	Ala	Thr	Phe	Gly	Asp	Leu	Lys	Lys	Ala	Lys	Arg	Pro	Asp
		115				120					125				
Leu	Tyr	Val	Ile	Gly	Thr	Asn	Leu	Ser	Thr	Gly	Phe	Ser	Glu	Thr	Phe
	130					135					140				
Ser	His	Glu	Arg	His	Ala	Asn	Met	Pro	Leu	Val	Asp	Ala	Val	Arg	Ile
145					150				155						160
Ser	Met	Ser	Ile	Pro	Leu	Phe	Phe	Ala	Ala	Arg	Arg	Leu	Gly	Lys	Arg
				165				170						175	
Ser	Asp	Val	Tyr	Val	Asp	Gly	Gly	Val	Met	Leu	Asn	Tyr	Pro	Val	Lys
			180					185					190		
Leu	Phe	Asp	Arg	Glu	Lys	Tyr	Ile	Asp	Leu	Glu	Lys	Glu	Lys	Glu	Ala
	195					200						205			
Ala	Arg	Tyr	Val	Glu	Tyr	Tyr	Asn	Gln	Glu	Asn	Ala	Arg	Phe	Leu	Leu
	210					215					220				

Glu Arg Pro Gly Arg Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
 225 230 235 240
 Leu Arg Leu Asp Ser Gln Glu Glu Ile Gly Leu Phe Arg Tyr Asp Glu
 245 250 255
 Pro Leu Lys Gly Lys Gln Ile Asn Arg Phe Pro Glu Tyr Ala Lys Ala
 260 265 270
 Leu Ile Gly Ala Leu Met Gln Val Gln Glu Asn Ile His Leu Lys Ser
 275 280 285
 Asp Asp Trp Gln Arg Thr Leu Tyr Ile Asn Thr Leu Asp Val Gly Thr
 290 295 300
 Thr Asp Phe Asp Ile Asn Asp Glu Lys Lys Lys Val Leu Val Asn Glu
 305 310 315 320
 Gly Ile Lys Gly Ala Glu Thr Tyr Phe Arg Trp Phe Glu Asp Pro Glu
 325 330 335
 Ala Lys Pro Val Asn Lys Val Asp Leu Val
 340 345

<210> 13
 <211> 1038
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 13
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 attggcgcca tgcagattct cgaaaatcgt ggcgtgttgc aagatattca cagagtcgga 120
 ggggtgcagt cggggtgcgat caacgcgctg atttttgctg tgggttacac ggtccgtgag 180
 caaaaagaga tcttacaagc cacggatttt aaccagttta tggataactc ttgggggtgtt 240
 attcgtgata ttcgcagget tgctcgagac tttggctggc acaagggtga cttctttaat 300
 agctggatag gtgatttgat tcatcgctgt ttggggaatc gccgagcgac gttcaaagat 360
 ctgcaaaagg ccaagcttcc tgatctttat gtcacggtta ctaatctgtc tacagggtat 420
 gcagagggtt tttcagccga aagacacccc gatatggagc tagcgacagc ggtgcgtatc 480
 tccatgtcga taccgctgtt ctttgcgggc gtgcgtcacg gtgaacgaca agatgtgtat 540
 gtcgatgggg gtgttcaact taactatccg attaaactgt ttgatcggga gcgttacatt 600
 gatctgggtc aagatcccgg tgccgttcgg cgaacgggtt attacaacaa agaaaacgct 660
 cgctttcagc ttgagcggcc gggccatagc ccctatgttt acaatcgcca gaccttgggt 720
 ttgcgactgg atagtcgaga ggagataggg ctctttcgtt atgacgaacc cctcaagggc 780
 aaaccatta agtccttcac tgactacgct cgacaacttt tcggtgcgtt gatgaatgca 840
 caggaaaaca ttcacttaca tggcgatgat tgggcgcgca cggcttatat cgatacattg 900
 gatgtgggta cgacggattt caatctttct gatgcaacca agcaagcact gattgagcaa 960
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 aatagagtgg agtcatag 1038

<210> 14
 <211> 345
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 14
 Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
 1 5 10 15
 Gly Val Ala Tyr Ile Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
 20 25 30
 Leu Gln Asp Ile His Arg Val Gly Gly Cys Ser Ala Gly Ala Ile Asn

Ala	Leu	Ile	Phe	Ala	Leu	Gly	Tyr	Thr	Val	Arg	Glu	Gln	Lys	Glu	Ile
50						55					60				
Leu	Gln	Ala	Thr	Asp	Phe	Asn	Gln	Phe	Met	Asp	Asn	Ser	Trp	Gly	Val
65					70					75					80
Ile	Arg	Asp	Ile	Arg	Arg	Leu	Ala	Arg	Asp	Phe	Gly	Trp	His	Lys	Gly
				85					90					95	
Asp	Phe	Phe	Asn	Ser	Trp	Ile	Gly	Asp	Leu	Ile	His	Arg	Arg	Leu	Gly
			100					105					110		
Asn	Arg	Arg	Ala	Thr	Phe	Lys	Asp	Leu	Gln	Lys	Ala	Lys	Leu	Pro	Asp
		115					120					125			
Leu	Tyr	Val	Ile	Gly	Thr	Asn	Leu	Ser	Thr	Gly	Tyr	Ala	Glu	Val	Phe
130						135					140				
Ser	Ala	Glu	Arg	His	Pro	Asp	Met	Glu	Leu	Ala	Thr	Ala	Val	Arg	Ile
145					150					155					160
Ser	Met	Ser	Ile	Pro	Leu	Phe	Phe	Ala	Ala	Val	Arg	His	Gly	Glu	Arg
				165					170					175	
Gln	Asp	Val	Tyr	Val	Asp	Gly	Gly	Val	Gln	Leu	Asn	Tyr	Pro	Ile	Lys
			180					185					190		
Leu	Phe	Asp	Arg	Glu	Arg	Tyr	Ile	Asp	Leu	Val	Lys	Asp	Pro	Gly	Ala
		195					200					205			
Val	Arg	Arg	Thr	Gly	Tyr	Tyr	Asn	Lys	Glu	Asn	Ala	Arg	Phe	Gln	Leu
210						215					220				
Glu	Arg	Pro	Gly	His	Ser	Pro	Tyr	Val	Tyr	Asn	Arg	Gln	Thr	Leu	Gly
225					230					235					240
Leu	Arg	Leu	Asp	Ser	Arg	Glu	Glu	Ile	Gly	Leu	Phe	Arg	Tyr	Asp	Glu
			245						250					255	
Pro	Leu	Lys	Gly	Lys	Pro	Ile	Lys	Ser	Phe	Thr	Asp	Tyr	Ala	Arg	Gln
			260					265					270		
Leu	Phe	Gly	Ala	Leu	Met	Asn	Ala	Gln	Glu	Asn	Ile	His	Leu	His	Gly
		275				280						285			
Asp	Asp	Trp	Ala	Arg	Thr	Val	Tyr	Ile	Asp	Thr	Leu	Asp	Val	Gly	Thr
290						295					300				
Thr	Asp	Phe	Asn	Leu	Ser	Asp	Ala	Thr	Lys	Gln	Ala	Leu	Ile	Glu	Gln
305					310					315					320
Gly	Ile	Asn	Gly	Thr	Glu	Asn	Tyr	Phe	Asp	Trp	Phe	Asp	Asn	Pro	Leu
			325						330					335	
Glu	Lys	Pro	Val	Asn	Arg	Val	Glu	Ser							
			340					345							

<210> 15

<211> 1344

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 15

atgctggtca	tcattcatgg	ctggagcgat	gaggcgggct	cgttcaagac	cctggccaga	60
cgtttggtcca	aggcgccacc	cgagggcctc	gggacgcagg	tcacggaaat	ccatctgggt	120
gattatgtgt	ccctggatga	ccaggtgacg	ttcaatgata	tggtcgatgc	catggccaga	180
gcctggagcg	atcgtggtct	gcccacggcc	ccgcgcagcg	tcgatgccgt	cgtgcacagc	240
accggcgggc	tggtgatccg	cgactggctc	acgcagctgt	acacgccgga	aacagccccc	300
attcgtcgcc	tgctgatgct	cgctccggcc	aatttcggct	cgccgctggc	acacaccgga	360
cgcagcatga	tcggccgggt	caccaagggc	tggaagggca	cgcggtctct	tgaaacgggc	420
aagcacattc	tcaaagggtc	cgaactggcc	agccccctac	cctgggcgct	ggccgaacgc	480
gatctgttca	gcgatcagaa	ctattatggc	gccgggcgca	tcctgtgcac	tgtcctggtg	540
ggcaacgccg	gttatcgcg	catcagcgcc	gtcgccaacc	ggcccggcac	ggacggcacc	600

gtgcgcggtca	gcagcgccaa	tctccaagcg	gccaggatgc	tgctcgattt	cagcgccagt	660
ccacaggctg	agccggaatt	caccctgcac	gacagcaccg	cggaaattgc	cttcggcatc	720
gccgacgagg	aagaccacag	caccatcgcc	gccaaaggatc	gcggcccgcg	caaggcagtc	780
acctgggaac	tgattctcaa	agccctgcag	atcgaggatg	caagctttgc	tcaatgggtg	840
cggcagatgc	aggagcattc	cgcgggccgtg	acggaaacgg	cggaaaaagcg	ccgcaatgtt	900
cactacaaca	gcttccagaa	taccgtcgtg	cgcggtggtg	acaaccacgg	tgccgcccgtg	960
caggattatc	tcatcgagtt	ttacatgaat	gatgatcgca	aactccgcga	tcagcgcctc	1020
acccagcgcc	tgccaggagca	ggtgattacc	aacgtgcacg	gctacggtga	cgacaagtcc	1080
tatcgcgaca	tgctgatcaa	ctgcacggag	ctctatgcgc	tgatgtccag	accgcaggat	1140
cgccgaaca	tcagcatcac	cgcctatccg	gatctctcca	agggactggt	ggggtatcgc	1200
acctacacgg	acgaggatat	cggttccctc	tctctggatg	cagcgcagat	ccgaaagctc	1260
tttaagccgc	accgtaccct	gttgatgaca	ctgtgcctgc	aacgctatca	gaaagatgat	1320
gtgttccgat	tcagggatgt	ttga				1344

<210> 16

<211> 447

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 16

Met	Leu	Val	Ile	Ile	His	Gly	Trp	Ser	Asp	Glu	Ala	Gly	Ser	Phe	Lys
1				5					10					15	
Thr	Leu	Ala	Arg	Arg	Leu	Ala	Lys	Ala	Pro	Pro	Glu	Gly	Leu	Gly	Thr
			20					25					30		
Gln	Val	Thr	Glu	Ile	His	Leu	Gly	Asp	Tyr	Val	Ser	Leu	Asp	Asp	Gln
		35					40					45			
Val	Thr	Phe	Asn	Asp	Leu	Val	Asp	Ala	Met	Ala	Arg	Ala	Trp	Ser	Asp
	50				55					60					
Arg	Gly	Leu	Pro	Thr	Ala	Pro	Arg	Ser	Val	Asp	Ala	Val	Val	His	Ser
65					70					75					80
Thr	Gly	Gly	Leu	Val	Ile	Arg	Asp	Trp	Leu	Thr	Gln	Leu	Tyr	Thr	Pro
			85					90						95	
Glu	Thr	Ala	Pro	Ile	Arg	Arg	Leu	Leu	Met	Leu	Ala	Pro	Ala	Asn	Phe
			100					105					110		
Gly	Ser	Pro	Leu	Ala	His	Thr	Gly	Arg	Ser	Met	Ile	Gly	Arg	Val	Thr
		115					120					125			
Lys	Gly	Trp	Lys	Gly	Thr	Arg	Leu	Phe	Glu	Thr	Gly	Lys	His	Ile	Leu
	130					135					140				
Lys	Gly	Leu	Glu	Leu	Ala	Ser	Pro	Tyr	Ala	Trp	Ala	Leu	Ala	Glu	Arg
145					150					155					160
Asp	Leu	Phe	Ser	Asp	Gln	Asn	Tyr	Tyr	Gly	Ala	Gly	Arg	Ile	Leu	Cys
			165						170					175	
Thr	Val	Leu	Val	Gly	Asn	Ala	Gly	Tyr	Arg	Gly	Ile	Ser	Ala	Val	Ala
			180					185					190		
Asn	Arg	Pro	Gly	Thr	Asp	Gly	Thr	Val	Arg	Val	Ser	Ser	Ala	Asn	Leu
	195						200					205			
Gln	Ala	Ala	Arg	Met	Leu	Leu	Asp	Phe	Ser	Ala	Ser	Pro	Gln	Ala	Glu
	210					215					220				
Pro	Glu	Phe	Thr	Leu	His	Asp	Ser	Thr	Ala	Glu	Ile	Ala	Phe	Gly	Ile
225					230					235					240
Ala	Asp	Glu	Glu	Asp	His	Ser	Thr	Ile	Ala	Ala	Lys	Asp	Arg	Gly	Pro
			245						250					255	
Arg	Lys	Ala	Val	Thr	Trp	Glu	Leu	Ile	Leu	Lys	Ala	Leu	Gln	Ile	Glu
			260					265					270		
Asp	Ala	Ser	Phe	Ala	Gln	Trp	Cys	Arg	Gln	Met	Gln	Glu	His	Ser	Ala
	275						280					285			

Ala	Val	Thr	Glu	Thr	Ala	Glu	Lys	Arg	Arg	Asn	Val	His	Tyr	Asn	Ser
290						295					300				
Phe	Gln	Asn	Thr	Val	Val	Arg	Val	Val	Asp	Asn	His	Gly	Ala	Ala	Val
305					310					315					320
Gln	Asp	Tyr	Leu	Ile	Glu	Phe	Tyr	Met	Asn	Asp	Asp	Arg	Lys	Leu	Arg
				325					330					335	
Asp	Gln	Arg	Leu	Thr	Gln	Arg	Leu	Gln	Glu	Gln	Val	Ile	Thr	Asn	Val
			340					345					350		
His	Gly	Tyr	Gly	Asp	Asp	Lys	Ser	Tyr	Arg	Ser	Met	Leu	Ile	Asn	Cys
		355					360					365			
Thr	Glu	Leu	Tyr	Ala	Leu	Met	Ser	Arg	Pro	Gln	Asp	Arg	Leu	Asn	Ile
	370					375					380				
Ser	Ile	Thr	Ala	Tyr	Pro	Asp	Leu	Ser	Lys	Gly	Leu	Val	Gly	Tyr	Arg
385					390					395					400
Thr	Tyr	Thr	Asp	Glu	Asp	Ile	Gly	Ser	Leu	Ser	Leu	Asp	Ala	Ala	Gln
				405					410					415	
Ile	Arg	Lys	Leu	Phe	Lys	Pro	His	Arg	Thr	Leu	Leu	Met	Thr	Leu	Cys
			420					425					430		
Leu	Gln	Arg	Tyr	Gln	Lys	Asp	Asp	Val	Phe	Arg	Phe	Arg	Asp	Val	
		435					440					445			

<210> 17

<211> 1137

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 17

atgaaaaaaa	gccttcaaca	acatcttgcc	gctgacggca	gcccaaagaa	tattctttct	60
ctcgacgggg	gaggaatcag	aggggctttg	acccttggtt	ttctcaaaaa	aatagaaagc	120
atcctgcagg	aaaaacatgg	gaaggactat	ctcctttgcg	atcactttga	tttgatcggt	180
ggaaacttcca	caggctccat	cattgcagca	gcattggcta	taggcatgac	agtggaggaa	240
atcactaaaa	tgtatatgga	tctgggcgga	aaaattttcg	gcaagaaaag	gagtttctgg	300
agaccctggg	aaactgcgaa	atacttgaaa	gcaggatatg	accacaaagc	tcttgaaaag	360
agtctgaaag	atgctttcca	ggattttcct	ttaggaagtg	accaaattag	aacaggtcct	420
tgtatagtag	ccaaaagagc	agataccaat	agtatatggc	cattgattaa	ccaccccaaa	480
ggaaaattct	atgattcaga	acaaggcaaa	aacaaaaata	tccccttatg	gcaggcagta	540
agggcagagta	ccgctgctcc	aacctatttc	gctccacaat	taatagatgt	gggtgatggt	600
caaaaggctg	cttttgtgga	cggaggggta	agcatggcca	ataaccccg	attaaccctg	660
ttaaaagtgg	ctacacttaa	aggttttcct	tttcattggc	caatgggaga	agacaaaactg	720
accatagttt	cagtaggcac	cggatatagt	gtttttccaaa	gacaaaagg	tgaaatcacc	780
aaagcttcct	tattaacttg	ggccaaaaac	gtcccggaaa	tgttgatgca	ggatgcttct	840
tggcagaatc	agaccatact	tcagtggatt	tctaaatccc	ccactgcaca	ttccatagat	900
atggaaatgg	aagaccttag	agatgacttt	ctaggcggaa	gaccactcat	caaatacctc	960
aggtacaact	tccccttgac	agtaaataat	ctcaatggat	tgaagcttgg	gaaaagcttt	1020
acccaaaaag	aggtcgaaga	tttggtggaa	atgagcaatg	cacataaccg	agaggagttg	1080
tataggattg	gggagaaggc	ggctgaagg	tcggtaaaaa	aagaacattt	tgaataa	1137

<210> 18

<211> 378

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 18

Met	Lys	Lys	Ser	Leu	Gln	Gln	His	Leu	Ala	Ala	Asp	Gly	Ser	Pro	Lys
1				5					10					15	
Asn	Ile	Leu	Ser	Leu	Asp	Gly	Gly	Gly	Ile	Arg	Gly	Ala	Leu	Thr	Leu
		20				25							30		
Gly	Phe	Leu	Lys	Lys	Ile	Glu	Ser	Ile	Leu	Gln	Glu	Lys	His	Gly	Lys
	35					40						45			
Asp	Tyr	Leu	Leu	Cys	Asp	His	Phe	Asp	Leu	Ile	Gly	Gly	Thr	Ser	Thr
	50				55						60				
Gly	Ser	Ile	Ile	Ala	Ala	Leu	Ala	Ile	Gly	Met	Thr	Val	Glu	Glu	
65				70					75					80	
Ile	Thr	Lys	Met	Tyr	Met	Asp	Leu	Gly	Gly	Lys	Ile	Phe	Gly	Lys	Lys
			85					90						95	
Arg	Ser	Phe	Trp	Arg	Pro	Trp	Glu	Thr	Ala	Lys	Tyr	Leu	Lys	Ala	Gly
		100					105						110		
Tyr	Asp	His	Lys	Ala	Leu	Glu	Lys	Ser	Leu	Lys	Asp	Ala	Phe	Gln	Asp
	115					120						125			
Phe	Leu	Leu	Gly	Ser	Asp	Gln	Ile	Arg	Thr	Gly	Leu	Cys	Ile	Val	Ala
	130				135						140				
Lys	Arg	Ala	Asp	Thr	Asn	Ser	Ile	Trp	Pro	Leu	Ile	Asn	His	Pro	Lys
145					150					155					160
Gly	Lys	Phe	Tyr	Asp	Ser	Glu	Gln	Gly	Lys	Asn	Lys	Asn	Ile	Pro	Leu
			165					170						175	
Trp	Gln	Ala	Val	Arg	Ala	Ser	Thr	Ala	Ala	Pro	Thr	Tyr	Phe	Ala	Pro
		180					185						190		
Gln	Leu	Ile	Asp	Val	Gly	Asp	Gly	Gln	Lys	Ala	Ala	Phe	Val	Asp	Gly
	195						200						205		
Gly	Val	Ser	Met	Ala	Asn	Asn	Pro	Ala	Leu	Thr	Leu	Leu	Lys	Val	Ala
	210				215						220				
Thr	Leu	Lys	Gly	Phe	Pro	Phe	His	Trp	Pro	Met	Gly	Glu	Asp	Lys	Leu
225				230					235					240	
Thr	Ile	Val	Ser	Val	Gly	Thr	Gly	Tyr	Ser	Val	Phe	Gln	Arg	Gln	Lys
			245					250						255	
Gly	Glu	Ile	Thr	Lys	Ala	Ser	Leu	Leu	Thr	Trp	Ala	Lys	Asn	Val	Pro
	260						265						270		
Glu	Met	Leu	Met	Gln	Asp	Ala	Ser	Trp	Gln	Asn	Gln	Thr	Ile	Leu	Gln
	275					280						285			
Trp	Ile	Ser	Lys	Ser	Pro	Thr	Ala	His	Ser	Ile	Asp	Met	Glu	Met	Glu
	290				295						300				
Asp	Leu	Arg	Asp	Asp	Phe	Leu	Gly	Gly	Arg	Pro	Leu	Ile	Lys	Tyr	Leu
305				310					315					320	
Arg	Tyr	Asn	Phe	Pro	Leu	Thr	Val	Asn	Asp	Leu	Asn	Gly	Leu	Lys	Leu
			325					330						335	
Gly	Lys	Ser	Phe	Thr	Gln	Lys	Glu	Val	Glu	Asp	Leu	Val	Glu	Met	Ser
			340				345						350		
Asn	Ala	His	Asn	Arg	Glu	Glu	Leu	Tyr	Arg	Ile	Gly	Glu	Lys	Ala	Ala
	355					360						365			
Glu	Gly	Ser	Val	Lys	Lys	Glu	His	Phe	Glu						
	370					375									

<210> 19

<211> 1248

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 19

atgaaaaaga caacgttagt tttggctcta ttgatgccat ttggtgccgc ctccgcacaa

60

gacaatagta	tgactccaga	agcaatcaca	tcagctcaag	tcgcacaaac	acaatcagcc	120
tccacctata	cctacgttag	gtgttggtat	cgaacagacg	caagccatga	ttcaccagca	180
accgactggg	agtgggctag	aaaggaaaac	ggagactatt	acaccattga	cggttactgg	240
tggtcatcga	tctcctttaa	aaatatgttc	tatagcgaga	ctcctcaaca	agagatcaag	300
cagcgttgtg	tagacacctt	ggatgttcag	cacgacaaag	ccgacatcac	ctactttgcc	360
gctgacaacc	gcttctctta	caaccattct	atctggacta	acgatcacgg	ctttcaagcg	420
aaccaaata	accgaatagt	cgcttttggc	gatagtcttt	cagacacggg	caacctattt	480
aatgggtcac	aatggatttt	ccctaaccct	aattcttggg	tcttgggtca	cttctctaac	540
ggcttcgttt	ggactgaata	cttggctaac	gctaagggcg	ttccactcta	taactgggct	600
gtgggtggcg	cagcaggaac	caaccaatat	gtcgtcttaa	ctgggtgtcta	tgatcaggtc	660
acttcgtacc	tgacttacat	gaagatggcg	aaaaattatc	gccagagaa	cacactattc	720
acattagagt	ttggattgaa	tgactttatg	aattacggac	gtgaagtagc	tgatgtaaaa	780
gctgacttta	gtagcgcact	gattcgcttc	accgacgctg	gcgcaaaaaa	cattctgttg	840
ttcaccctac	cagatgcgac	caaagcccct	cagtttaagt	actcaacggc	ccaagaaatc	900
gagacagttc	gtggcaagat	tctggcgctt	aaccagttca	tcaaagaaca	agcagagtac	960
tatcaaagca	aaggtgacaa	cgtgatccta	tttgatgcgc	acgctctatt	ctctagcatc	1020
accagcgacc	cacaaaaaca	cgggttcaga	aacgcaaaaag	atgcttgcct	agatattaat	1080
cgtagtgcat	ctcaagacta	cctatacagc	catagtctga	ccaacgactg	tgcaacctat	1140
ggttctgata	gctatgtatt	ttggggcgta	acacacccaa	ccacagcaac	tcataaatac	1200
atcgcaacgc	atatactgat	gaattcaatg	tcgaccttcg	actttttaa		1248

<210> 20

<211> 415

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<221> SIGNAL

<222> (1)...(19)

<400> 20

Met	Lys	Lys	Thr	Thr	Leu	Val	Leu	Ala	Leu	Leu	Met	Pro	Phe	Gly	Ala
1				5					10					15	
Ala	Ser	Ala	Gln	Asp	Asn	Ser	Met	Thr	Pro	Glu	Ala	Ile	Thr	Ser	Ala
			20					25					30		
Gln	Val	Ala	Gln	Thr	Gln	Ser	Ala	Ser	Thr	Tyr	Thr	Tyr	Val	Arg	Cys
		35					40					45			
Trp	Tyr	Arg	Thr	Asp	Ala	Ser	His	Asp	Ser	Pro	Ala	Thr	Asp	Trp	Glu
	50					55					60				
Trp	Ala	Arg	Lys	Glu	Asn	Gly	Asp	Tyr	Tyr	Thr	Ile	Asp	Gly	Tyr	Trp
65					70					75					80
Trp	Ser	Ser	Ile	Ser	Phe	Lys	Asn	Met	Phe	Tyr	Ser	Glu	Thr	Pro	Gln
			85					90						95	
Gln	Glu	Ile	Lys	Gln	Arg	Cys	Val	Asp	Thr	Leu	Asp	Val	Gln	His	Asp
			100					105						110	
Lys	Ala	Asp	Ile	Thr	Tyr	Phe	Ala	Asp	Asn	Arg	Phe	Ser	Tyr	Asn	
		115					120				125				
His	Ser	Ile	Trp	Thr	Asn	Asp	His	Gly	Phe	Gln	Ala	Asn	Gln	Ile	Asn
	130					135					140				
Arg	Ile	Val	Ala	Phe	Gly	Asp	Ser	Leu	Ser	Asp	Thr	Gly	Asn	Leu	Phe
145					150					155					160
Asn	Gly	Ser	Gln	Trp	Ile	Phe	Pro	Asn	Pro	Asn	Ser	Trp	Phe	Leu	Gly
			165					170						175	
His	Phe	Ser	Asn	Gly	Phe	Val	Trp	Thr	Glu	Tyr	Leu	Ala	Asn	Ala	Lys
		180					185						190		
Gly	Val	Pro	Leu	Tyr	Asn	Trp	Ala	Val	Gly	Gly	Ala	Ala	Gly	Thr	Asn
		195					200					205			

Gln	Tyr	Val	Ala	Leu	Thr	Gly	Val	Tyr	Asp	Gln	Val	Thr	Ser	Tyr	Leu
210						215					220				
Thr	Tyr	Met	Lys	Met	Ala	Lys	Asn	Tyr	Arg	Pro	Glu	Asn	Thr	Leu	Phe
225					230					235					240
Thr	Leu	Glu	Phe	Gly	Leu	Asn	Asp	Phe	Met	Asn	Tyr	Gly	Arg	Glu	Val
				245					250					255	
Ala	Asp	Val	Lys	Ala	Asp	Phe	Ser	Ser	Ala	Leu	Ile	Arg	Leu	Thr	Asp
			260					265					270		
Ala	Gly	Ala	Lys	Asn	Ile	Leu	Leu	Phe	Thr	Leu	Pro	Asp	Ala	Thr	Lys
		275					280					285			
Ala	Pro	Gln	Phe	Lys	Tyr	Ser	Thr	Ala	Gln	Glu	Ile	Glu	Thr	Val	Arg
	290					295					300				
Gly	Lys	Ile	Leu	Ala	Phe	Asn	Gln	Phe	Ile	Lys	Glu	Gln	Ala	Glu	Tyr
305					310					315					320
Tyr	Gln	Ser	Lys	Gly	Asp	Asn	Val	Ile	Leu	Phe	Asp	Ala	His	Ala	Leu
				325					330					335	
Phe	Ser	Ser	Ile	Thr	Ser	Asp	Pro	Gln	Lys	His	Gly	Phe	Arg	Asn	Ala
			340					345					350		
Lys	Asp	Ala	Cys	Leu	Asp	Ile	Asn	Arg	Ser	Ala	Ser	Gln	Asp	Tyr	Leu
		355					360					365			
Tyr	Ser	His	Ser	Leu	Thr	Asn	Asp	Cys	Ala	Thr	Tyr	Gly	Ser	Asp	Ser
	370					375					380				
Tyr	Val	Phe	Trp	Gly	Val	Thr	His	Pro	Thr	Thr	Ala	Thr	His	Lys	Tyr
385					390					395					400
Ile	Ala	Thr	His	Ile	Leu	Met	Asn	Ser	Met	Ser	Thr	Phe	Asp	Phe	
				405					410					415	

<210> 21

<211> 1716

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 21

atgcagcagc	ataaattgag	gaattttcaac	aagggattga	ccggcgtcgt	attgagcgta	60
ttgacctcta	ccagcgccat	ggctttttaca	caaatcggtg	gcggcggcgc	gattccgatg	120
ggccatgaat	ggctcacgcg	cagatccgca	ctggaattat	taaatgcaga	ccatatcgtc	180
tccaacgacc	cgctcgaccc	acgcttgggc	tggagccagg	gcttggccaa	aaatttggat	240
ctctccaatg	cattgaacga	agtgcagcgc	atccagagcg	ttaccaagac	caacgcactt	300
tatgaaccac	gctatgatga	cgtgttttct	gcgattgtcg	gcgaacgctg	ggtggacacg	360
gccggtttca	acgttgcgaa	ggctaccgtc	ggtaaaatcg	attgtttcag	cgcggtcgcg	420
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caaggtggcg	ttaacgccgc	acgccgcggg	caacaacggt	tcatacacca	tttcatcaac	540
gccgcgatgg	ccgaagaaaa	aagcataaaa	gcgtgggacg	gcggtggata	ctccacgctg	600
gaaaaagtca	gccacaatta	tttcttggtt	ggtcgcgctg	tgcatttggt	ccaggattct	660
ttcagcccgg	aacacaccgt	gcgtctgccg	caagacaact	acgaaaaagt	acgtcaggta	720
aaagcctatc	tgtgttccga	aggcgcagag	caacatacgc	ataacgcgca	ggatgcgatc	780
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acctacaaac	ccagcaatat	gaaacccggt	gccttggttg	cgatggaagc	ctcgaggagc	900
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cagcaagagg	cacaaacgct	ggtaaaacaac	tggttgctgt	tcgacgaaca	ggaaatgctg	1020
agctgggtacg	acgaagaaac	tcatcgcgat	cacacttaacg	tgctcgaacc	cggccagaac	1080
ggccccggta	tttccatggt	cgattgcgatg	gtgggtctgg	gcgtgacgtc	tggcagccag	1140
gctgcgcgtg	tggccgaact	ggatcaacaa	cgtcgccagt	gcttggttaa	cgtcaaggcc	1200
accaccgggt	acagcgatct	gaacgatccg	cacatggata	tcccgtataa	ctggcaatgg	1260
acgtcgacca	cgcagtggaa	agtgccaagc	gcgagctgga	cgattccgca	gttgccggcc	1320
gacgcaggca	agaaagtgac	gatcaaaaaac	gccatcaacg	gcaatccgct	ggtagcgccc	1380

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gctggcgtca aacacaacag cgatatttat tccgcgccgg gtgaagccat cgaattcatt 1440
ttcgtcgggtg actacaacaa tgagtcttat ctgcgctcga aaaaagatgc ggatttggtc 1500
ttgagctaca gtgcggtatc cggcaagggc ttgctgtaca acacaccgaa tcaggcaggt 1560
tatcgcgtga aaccggcggg cgtgctgtgg acgatcgaga acacctactg gaatgatttc 1620
ctgtggttca acagttcgaa caaccgcatac tacgtaagcg gcacgggcga tgccaacaag 1680
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<210> 22
<211> 571
<212> PRT
<213> Unknown

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<220>
<223> Obtained from an environmental sample.

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<221> SIGNAL
<222> (1)...(28)

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          20           25           30
Gly Gly Gly Gly Ala Ile Pro Met Gly His Glu Trp Leu Thr Arg Arg
          35           40           45
Ser Ala Leu Glu Leu Leu Asn Ala Asp His Ile Val Ser Asn Asp Pro
          50           55           60
Leu Asp Pro Arg Leu Gly Trp Ser Gln Gly Leu Ala Lys Asn Leu Asp
65          70          75          80
Leu Ser Asn Ala Leu Asn Glu Val Gln Arg Ile Gln Ser Val Thr Lys
          85          90          95
Thr Asn Ala Leu Tyr Glu Pro Arg Tyr Asp Asp Val Phe Ser Ala Ile
          100         105         110
Val Gly Glu Arg Trp Val Asp Thr Ala Gly Phe Asn Val Ala Lys Ala
          115         120         125
Thr Val Gly Lys Ile Asp Cys Phe Ser Ala Val Ala Gln Glu Pro Ala
          130         135         140
Asp Val Gln Gln Asp His Phe Met Arg Arg Tyr Asp Asp Val Gly Gly
145          150         155         160
Gln Gly Gly Val Asn Ala Ala Arg Arg Gly Gln Gln Arg Phe Ile Thr
          165         170         175
His Phe Ile Asn Ala Ala Met Ala Glu Glu Lys Ser Ile Lys Ala Trp
          180         185         190
Asp Gly Gly Gly Tyr Ser Thr Leu Glu Lys Val Ser His Asn Tyr Phe
          195         200         205
Leu Phe Gly Arg Ala Val His Leu Phe Gln Asp Ser Phe Ser Pro Glu
          210         215         220
His Thr Val Arg Leu Pro Gln Asp Asn Tyr Glu Lys Val Arg Gln Val
225          230         235         240
Lys Ala Tyr Leu Cys Ser Glu Gly Ala Glu Gln His Thr His Asn Ala
          245         250         255
Gln Asp Ala Ile Ser Phe Thr Ser Gly Asp Val Ile Trp Lys Lys Asn
          260         265         270
Thr Arg Leu Asp Ala Gly Trp Ser Thr Tyr Lys Pro Ser Asn Met Lys
          275         280         285
Pro Val Ala Leu Val Ala Met Glu Ala Ser Lys Asp Leu Trp Ala Ala
          290         295         300
Phe Ile Arg Thr Met Ala Ala Pro Arg Ser Glu Arg Arg Ala Ile Ala
305          310         315         320

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Gln Gln Glu Ala Gln Thr Leu Val Asn Asn Trp Leu Ser Phe Asp Glu
 325 330 335
 Gln Glu Met Leu Ser Trp Tyr Asp Glu Thr His Arg Asp His Thr
 340 345 350
 Tyr Val Leu Glu Pro Gly Gln Asn Gly Pro Gly Ile Ser Met Phe Asp
 355 360 365
 Cys Met Val Gly Leu Gly Val Thr Ser Gly Ser Gln Ala Ala Arg Val
 370 375 380
 Ala Glu Leu Asp Gln Gln Arg Arg Gln Cys Leu Phe Asn Val Lys Ala
 385 390 395 400
 Thr Thr Gly Tyr Ser Asp Leu Asn Asp Pro His Met Asp Ile Pro Tyr
 405 410 415
 Asn Trp Gln Trp Thr Ser Thr Thr Gln Trp Lys Val Pro Ser Ala Ser
 420 425 430
 Trp Thr Ile Pro Gln Leu Pro Ala Asp Ala Gly Lys Lys Val Thr Ile
 435 440 445
 Lys Asn Ala Ile Asn Gly Asn Pro Leu Val Ala Pro Ala Gly Val Lys
 450 455 460
 His Asn Ser Asp Ile Tyr Ser Ala Pro Gly Glu Ala Ile Glu Phe Ile
 465 470 475 480
 Phe Val Gly Asp Tyr Asn Asn Glu Ser Tyr Leu Arg Ser Lys Lys Asp
 485 490 495
 Ala Asp Leu Phe Leu Ser Tyr Ser Ala Val Ser Gly Lys Gly Leu Leu
 500 505 510
 Tyr Asn Thr Pro Asn Gln Ala Gly Tyr Arg Val Lys Pro Ala Gly Val
 515 520 525
 Leu Trp Thr Ile Glu Asn Thr Tyr Trp Asn Asp Phe Leu Trp Phe Asn
 530 535 540
 Ser Ser Asn Asn Arg Ile Tyr Val Ser Gly Thr Gly Asp Ala Asn Lys
 545 550 555 560
 Leu His Ser Gln Trp Ile Ile Asp Gly Leu Lys
 565 570

<210> 23

<211> 1473

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 23

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cccctcaccg	gcttcaggc	caccgcttac	cagcgccagg	atacgggcca	ggtggtcatc	180
gcctaccgcg	gcacggaatt	cgaccgcgaa	cccgctgcgcg	atggcggcgt	cgacgcaggc	240
atgggtgttg	ttggcgtcaa	cgcccagtc	cctgcattccg	aggtattcac	ccgcgaagtg	300
atcgaaaagg	cgaagcacga	agccgagctc	aaagatgcgcg	agccgaagat	caccgtcacc	360
gggcattccc	tcggcgccac	cctcgccgaa	atcaatgccg	cgaaatacgg	cctccacggc	420
gaaaccttca	atgcctacgg	tgccggccagc	ctcaaggcca	tccccgaggg	cggcgacacg	480
gtgatcgacc	atgtccgcgc	cggcgatctc	gtcagcgccg	ccagcccgc	ctacgggcag	540
gtgcgtgtgt	acgcagctca	gcaggatatc	gataccctgc	aacatgcccg	ctaccgcgac	600
gacagtggca	tcttcagcct	gcgcaacccc	atcaaggcca	cggatttcga	cgcccacgcg	660
atcgataact	tcgtgcccc	cagcaagctg	cttggccaat	cgatcatcgc	tcttgagaac	720
gaagcccgtt	acgaagccca	caagggcgat	atcgatcgct	atcgcgatga	cgtggccgat	780
atccggaaag	gcattctcgc	tccctgggaa	atccccagg	ccgtcggcca	gctgaaggac	840
aagctcgaac	acgaagcctt	cgagctggcc	ggcaaggcca	tctcgcgcgt	cgagcagcgt	900
gtagccgagg	tcgttcacga	ggcgaaggaa	gggttcgatc	atctcaagga	aggcttgac	960
cacgtcaggg	aagagatcag	cgagggcac	cacgcccgtg	aagagaaggc	ttccagcgca	1020

tggcacaccc	tcacccaccc	gaaggaatgg	ttcgagcacg	acaaacctca	agtgaatctc	1080
gaccatcccc	agcatccaga	caacgccttg	ttcaagcagg	cgcagggcgc	ggtacacgcc	1140
ctcgaatcca	cgcaaggcgc	cacgccagat	aggacgagcg	accagatcgc	aggttctctg	1200
gtggctcgcg	cgcgacgcga	tggctctcgag	cgggtggacc	gcgccgtgct	cagcgatgac	1260
actagccggc	tctacggcgt	gcagggtgcg	acggattcgc	ccttgaagca	gttcaccgag	1320
gtgaacacga	cagtggcggc	gcaaactgca	ctgcagcaaa	gcagccaggc	atggcagcag	1380
caagcagaga	tcgcgcgaca	gaaccaggca	accagccagg	ctcagcgcat	ggaaccgcag	1440
gtgccccgcg	aggcaccggc	acatggcatg	taa			1473

<210> 24

<211> 490

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 24

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His	Asp	Ser	Gln	Val	Asp	Ala	Asp	Val	Lys	Leu	Asp	Gly	Ile	Ser	Tyr
			20					25					30		
Lys	Val	Phe	Ala	Thr	Thr	Asp	Asp	Pro	Leu	Thr	Gly	Phe	Gln	Ala	Thr
		35					40					45			
Ala	Tyr	Gln	Arg	Gln	Asp	Thr	Gly	Glu	Val	Val	Ile	Ala	Tyr	Arg	Gly
	50				55					60					
Thr	Glu	Phe	Asp	Arg	Glu	Pro	Val	Arg	Asp	Gly	Gly	Val	Asp	Ala	Gly
65					70					75					80
Met	Val	Leu	Leu	Gly	Val	Asn	Ala	Gln	Ser	Pro	Ala	Ser	Glu	Val	Phe
				85					90					95	
Thr	Arg	Glu	Val	Ile	Glu	Lys	Ala	Lys	His	Glu	Ala	Glu	Leu	Asn	Asp
			100					105					110		
Arg	Glu	Pro	Lys	Ile	Thr	Val	Thr	Gly	His	Ser	Leu	Gly	Gly	Thr	Leu
		115					120						125		
Ala	Glu	Ile	Asn	Ala	Ala	Lys	Tyr	Gly	Leu	His	Gly	Glu	Thr	Phe	Asn
-130						135					140				
Ala	Tyr	Gly	Ala	Ala	Ser	Leu	Lys	Gly	Ile	Pro	Glu	Gly	Gly	Asp	Thr
145				150						155					160
Val	Ile	Asp	His	Val	Arg	Ala	Gly	Asp	Leu	Val	Ser	Ala	Ala	Ser	Pro
			165						170					175	
His	Tyr	Gly	Gln	Val	Arg	Val	Tyr	Ala	Ala	Gln	Gln	Asp	Ile	Asp	Thr
			180					185					190		
Leu	Gln	His	Ala	Gly	Tyr	Arg	Asp	Asp	Ser	Gly	Ile	Phe	Ser	Leu	Arg
		195					200					205			
Asn	Pro	Ile	Lys	Ala	Thr	Asp	Phe	Asp	Ala	His	Ala	Ile	Asp	Asn	Phe
	210					215					220				
Val	Pro	Asn	Ser	Lys	Leu	Leu	Gly	Gln	Ser	Ile	Ile	Ala	Pro	Glu	Asn
225				230						235					240
Glu	Ala	Arg	Tyr	Glu	Ala	His	Lys	Gly	Met	Ile	Asp	Arg	Tyr	Arg	Asp
			245						250					255	
Asp	Val	Ala	Asp	Ile	Arg	Lys	Gly	Ile	Ser	Ala	Pro	Trp	Glu	Ile	Pro
		260						265					270		
Lys	Ala	Val	Gly	Glu	Leu	Lys	Asp	Lys	Leu	Glu	His	Glu	Ala	Phe	Glu
		275					280					285			
Leu	Ala	Gly	Lys	Gly	Ile	Leu	Ala	Val	Glu	His	Gly	Val	Ala	Glu	Val
		290				295					300				
Val	His	Glu	Ala	Lys	Glu	Gly	Phe	Asp	His	Leu	Lys	Glu	Gly	Leu	His
305					310					315					320
His	Val	Arg	Glu	Glu	Ile	Ser	Glu	Gly	Ile	His	Ala	Val	Glu	Glu	Lys

Met 1	Cys	Ala	Lys	Val 5	Lys	Val	Val	Lys	Ile 10	Lys	Thr	Asn	Thr	Gly 15	Ser
Pro	Asn	Lys	Tyr	His	Phe	Lys	Asn	Leu	Val	Phe	Glu	Gly	Gly	Gly	Val
			20					25					30		
Lys	Gly	Ile	Ala	Tyr	Val	Gly	Ala	Leu	Thr	Lys	Leu	Asp	Glu	Glu	Gly
		35					40					45			
Ile	Leu	Gln	Asn	Ile	Lys	Arg	Val	Ala	Gly	Thr	Ser	Ala	Gly	Ala	Met
	50					55					60				
Val	Ala	Val	Leu	Val	Gly	Leu	Gly	Phe	Thr	Ala	Lys	Glu	Ile	Ser	Asp
65					70					75					80
Ile	Leu	Trp	Asp	Ile	Lys	Phe	Gln	Asn	Phe	Leu	Asp	Asn	Ser	Trp	Gly
				85					90					95	
Val	Ile	Arg	Asn	Thr	Asn	Arg	Leu	Leu	Thr	Glu	Tyr	Gly	Trp	Tyr	Lys
			100					105					110		
Gly	Glu	Phe	Arg	Asp	Leu	Met	Ala	Asp	Tyr	Ile	Lys	Arg	Lys	Thr	
		115					120				125				
Asp	Asp	Gly	Glu	Ile	Thr	Phe	Gly	Glu	Leu	Glu	Ala	Met	Arg	Lys	Glu
		130				135					140				
Gly	Lys	Pro	Phe	Leu	Glu	Ile	His	Leu	Val	Gly	Ser	Asp	Leu	Thr	Thr
145				150						155					160
Gly	Tyr	Ser	Arg	Val	Phe	Asn	Ser	Lys	Asn	Thr	Pro	Asn	Val	Lys	Val
				165					170					175	
Ala	Asp	Ala	Ala	Arg	Ile	Ser	Met	Ser	Ile	Pro	Leu	Phe	Phe	Ser	Ala
			180					185					190		
Val	Arg	Gly	Val	Gln	Gly	Asp	Asp	His	Leu	Tyr	Val	Asp	Gly	Gly	Leu
		195					200					205			
Leu	Asp	Asn	Tyr	Ala	Ile	Lys	Ile	Phe	Asp	Gln	Ser	Lys	Leu	Val	Ser
	210					215					220				
Asp	Lys	Asn	Asn	Lys	Arg	Lys	Thr	Glu	Tyr	Tyr	Asn	Arg	Leu	Asn	Gln
225				230						235				240	
Gln	Val	Asn	Ala	Lys	Ala	Thr	Lys	Ser	Lys	Thr	Glu	Ser	Val	Glu	Tyr
				245					250					255	
Val	Tyr	Asn	Lys	Glu	Thr	Leu	Gly	Phe	Arg	Leu	Asp	Ala	Lys	Glu	Asp
			260					265					270		
Ile	Asn	Leu	Phe	Leu	Asn	His	Asp	Asp	Ala	Pro	Gln	Lys	Glu	Ile	Lys
		275					280					285			
Ser	Phe	Phe	Ser	Tyr	Thr	Lys	Ala	Leu	Val	Ser	Thr	Leu	Ile	Asp	Phe
	290					295					300				
Gln	Asn	Asn	Val	His	Leu	His	Ser	Asp	Asp	Trp	Gln	Arg	Thr	Val	Tyr
305				310						315					320
Ile	Asp	Thr	Leu	Gly	Val	Ser	Ser	Ile	Asp	Phe	Gly	Leu	Ser	Asn	Thr
				325					330					335	
Thr	Lys	Gln	Ala	Leu	Val	Asp	Ser	Gly	Tyr	Asn	Tyr	Thr	Thr	Ala	Tyr
			340					345					350		
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<213> Unknown

<223> Obtained from an environmental sample.

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60
120


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gtcgagggttc tcggcgaaag gggactgctg gaagggatcg caaatgtcgg cggcgcttca 180
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gtcgtcttta accagaacat tgcggacctc accgatatcg agaagaccgt cgagccgtcc 300
tccgggatta caggcatggt caagagcgtg ttcaagaagg gttggcaggc ggtgcgcaac 360
gtaaccggca cctctgacga gcgcggggcg gggctctatc gcggcgagaa gttgcgagcc 420
tggtatcagag acctgattgc acagcgagtc gagggcgggc gctccgaggt cctgagccga 480
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ttcaccggaa ccaacttcac gtcgaagaag ctcgaagtgt tcagtctgca cgagaccccg 660
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aagggcacgc gggaatggct ggcgctgtac ttcgacgacg ccggaataga ggtcgaattt 1200
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tcgtttcgag ccttgatcgc ggcctag 1287

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<210> 28
 <211> 428
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 28

Met	Ser	Ile	Thr	Val	Tyr	Arg	Lys	Pro	Ser	Gly	Gly	Phe	Gly	Ala	Ile
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Val	Pro	Gln	Ala	Lys	Ile	Glu	Asn	Leu	Val	Phe	Glu	Gly	Gly	Gly	Pro
			20					25					30		
Lys	Gly	Leu	Val	Tyr	Val	Gly	Ala	Val	Glu	Val	Leu	Gly	Glu	Arg	Gly
		35					40					45			
Leu	Leu	Glu	Gly	Ile	Ala	Asn	Val	Gly	Gly	Ala	Ser	Ala	Gly	Ala	Met
		50				55					60				
Thr	Ala	Leu	Ala	Val	Gly	Leu	Gly	Leu	Ser	Pro	Arg	Glu	Ile	Arg	Ala
65				70					75					80	
Val	Val	Phe	Asn	Gln	Asn	Ile	Ala	Asp	Leu	Thr	Asp	Ile	Glu	Lys	Thr
			85						90					95	
Val	Glu	Pro	Ser	Ser	Gly	Ile	Thr	Gly	Met	Phe	Lys	Ser	Val	Phe	Lys
			100					105					110		
Lys	Gly	Trp	Gln	Ala	Val	Arg	Asn	Val	Thr	Gly	Thr	Ser	Asp	Glu	Arg
		115					120					125			
Gly	Arg	Gly	Leu	Tyr	Arg	Gly	Glu	Lys	Leu	Arg	Ala	Trp	Ile	Arg	Asp
		130				135					140				
Leu	Ile	Ala	Gln	Arg	Val	Glu	Ala	Gly	Arg	Ser	Glu	Val	Leu	Ser	Arg
145				150					155					160	
Ala	Asp	Ala	Asp	Gly	Arg	Asn	Phe	Tyr	Glu	Lys	Ala	Ala	Ala	Lys	Lys
			165						170					175	
Gly	Ala	Leu	Thr	Phe	Ala	Glu	Leu	Asp	Arg	Val	Ala	Gln	Met	Ala	Pro
			180					185				190			
Gly	Leu	Arg	Leu	Arg	Arg	Leu	Ala	Phe	Thr	Gly	Thr	Asn	Phe	Thr	Ser
		195				200						205			
Lys	Lys	Leu	Glu	Val	Phe	Ser	Leu	His	Glu	Thr	Pro	Asp	Met	Pro	Ile
		210				215					220				
Asp	Val	Ala	Val	Arg	Ile	Ser	Ala	Ser	Leu	Pro	Trp	Phe	Phe	Lys	Ser

225		230		235		240									
Val	Lys	Trp	Asn	Gly	Ser	Glu	Tyr	Ile	Asp	Gly	Gly	Cys	Leu	Ser	Asn
				245					250					255	
Phe	Pro	Met	Pro	Ile	Phe	Asp	Val	Asp	Pro	Tyr	Arg	Gly	Asp	Ala	Ser
			260					265					270		
Ser	Lys	Ile	Arg	Leu	Gly	Ile	Phe	Gly	Gln	Asn	Leu	Ala	Thr	Leu	Gly
		275				280						285			
Phe	Lys	Val	Asp	Ser	Glu	Glu	Ile	Arg	Asp	Ile	Leu	Trp	Arg	Ser	
	290					295				300					
Pro	Glu	Ser	Thr	Ser	Asp	Gly	Phe	Phe	Gln	Gly	Ile	Leu	Ser	Ser	Val
305					310					315					320
Lys	Ala	Ser	Ala	Glu	His	Trp	Val	Val	Gly	Ile	Asp	Val	Glu	Gly	Ala
			325						330					335	
Thr	Arg	Ala	Ser	Asn	Val	Ala	Val	His	Gly	Lys	Tyr	Ala	Gln	Arg	Thr
		340						345					350		
Ile	Gln	Ile	Pro	Asp	Leu	Gly	Tyr	Ser	Thr	Phe	Lys	Phe	Asp	Leu	Ser
	355					360						365			
Asp	Ala	Asp	Lys	Glu	Arg	Met	Ala	Glu	Ala	Gly	Ala	Lys	Ala	Thr	Arg
370						375					380				
Glu	Trp	Leu	Ala	Leu	Tyr	Phe	Asp	Asp	Ala	Gly	Ile	Glu	Val	Glu	Phe
385					390					395					400
Ser	Asp	Pro	Asn	Glu	Leu	Arg	Gly	Gln	Leu	Ser	Asp	Ala	Ala	Phe	Ala
			405					410						415	
Asp	Leu	Glu	Asp	Ser	Phe	Arg	Ala	Leu	Ile	Ala	Ala				
		420						425							

<210> 29
 <211> 753
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 29
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 gatagcgtga ttagagaaat caatagccaa actcaacctt taggatatga gattgtagca 180
 gattctattc gtgatgggtca tattggctct tttgcctgta agatggctgt ctttagaaat 240
 aatggaaacg gcaatttgtt ttttagcaatc aaagggactg atatgaataa tatcaatgac 300
 ttgggtgaatg acctaaccat gatattagga ggtattgggt ctggttgctgc aatccaacca 360
 acgattaaca tggcacaaga actcatcgac caatatggag tgaatttgat tacagggtcac 420
 tcccttgagg gctacatgac tgagatcatc gccaccaatc gtggacttcc aggtattgca 480
 ttttgcgcac cagggttcaaa tgggtccatt gtaaaattag gtggacaaga gacacctggc 540
 tttcacaatg tgaactttga acatgatcca gcaggtaacg ttatgacggg ggtttatact 600
 catgtccaat ggagtattta tgtaggatgt gatgggatga ctcatgggtat tgaaaatatg 660
 gtgaattatt ttaaagataa aagagattta accaatcgca atattcaagg aagaagtga 720
 agtcataata cgggttatta ttacccaaaa taa 753

<210> 30
 <211> 250
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 30
 Met Gly Asn Gly Ala Ala Val Gly Ser Asn Asp Asn Gly Arg Glu Glu

1	5	10	15
Ser Val Tyr	Val Leu Ser Val	Ile Ala Cys Asn Val	Tyr Tyr Leu Gln
	20	25	30
Lys Cys Glu	Gly Gly Ala Ser	Arg Asp Ser Val	Ile Arg Glu Ile Asn
	35	40	45
Ser Gln Thr	Gln Pro Leu Gly	Tyr Glu Ile Val	Ala Asp Ser Ile Arg
	50	55	60
Asp Gly His	Ile Gly Ser Phe	Ala Cys Lys Met	Ala Val Phe Arg Asn
65		70	75
Asn Gly Asn	Gly Asn Cys Val	Leu Ala Ile Lys	Gly Thr Asp Met Asn
	85	90	95
Asn Ile Asn	Asp Leu Val Asn	Asp Leu Thr Met	Ile Leu Gly Gly Ile
	100	105	110
Gly Ser Val	Ala Ala Ile Gln	Pro Thr Ile Asn	Met Ala Gln Glu Leu
	115	120	125
Ile Asp Gln	Tyr Gly Val Asn	Asn Leu Ile Thr	Gly His Ser Leu Gly Gly
	130	135	140
Tyr Met Thr	Glu Ile Ile Ala	Thr Asn Arg Gly	Leu Pro Gly Ile Ala
145		150	155
Phe Cys Ala	Pro Gly Ser Asn	Gly Pro Ile Val	Lys Leu Gly Gly Gln
	165	170	175
Glu Thr Pro	Gly Phe His Asn	Val Asn Phe Glu	His Asp Pro Ala Gly
	180	185	190
Asn Val Met	Thr Gly Val Tyr	Thr His Val Gln	Trp Ser Ile Tyr Val
	195	200	205
Gly Cys Asp	Gly Met Thr His	Gly Ile Glu Asn	Met Val Asn Tyr Phe
	210	215	220
Lys Asp Lys	Arg Asp Leu Thr	Asn Arg Asn Ile	Gln Gly Arg Ser Glu
225		230	235
Ser His Asn	Thr Gly Tyr Tyr	Tyr Pro Lys	
	245	250	

<210> 31

<211> 1422

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 31

atgaaaaaga	aattatgtac	atgggctctc	gtaacagcga	tatcttcttg	agttgttgcg	60
attccaaccg	tagcatctgc	ttgcggaatg	ggtgaagtaa	tgaaacagga	ggatcaagag	120
cacaaacgtg	tgaagagatg	gtctgctggag	catccgcacc	atgctaataa	aagcacgcac	180
ttatggattg	ctcgaaatgc	gattcaaat	atgagtcgta	atcaagataa	gacgggtcaa	240
gaaaatgaat	tacaattctt	aaaaatacct	gaatataagg	agttatttga	aagagggcgt	300
tatgatgccg	attatcttga	tgagtttaac	gatggaggta	caggtacaat	cggtattgat	360
gggctaatta	aaggaggctg	gaaatctcat	ttctatgatc	ctgatacgaa	aaagaactat	420
aaaggagaag	aagaaccaac	agccctttcg	caaggggata	aatattttta	attagcagga	480
gattatttta	agaaagaaga	ttggaaacaa	gcttttctatt	atttaggtgt	tgcgacgcat	540
tacttcacag	atgctactca	gccaatgcat	gctgctaatt	ttacagctgt	cgacatgagt	600
gcaataaagt	ttcatagcgc	ttttgaaaat	tatgtaacga	cagttcagac	accgtttgaa	660
gtgaaggatg	ataagggaac	atataatttg	gtcaattctg	atgatccgaa	gcagtggata	720
catgaaacag	cgaaactcgc	aaaagcagaa	attatgaata	ttactagtga	taatattaaa	780
tctcaatata	ataaaggaaa	caaagatctt	tggcaacaag	aagttatgcc	agctgtccag	840
aggagtttag	agaaagcgca	aagaaacacg	gcgggattta	ttcatttatg	gtttaaaaca	900
tatgtttggc	aaactgcagc	tgaagatatt	gaaactacac	aggtaaaaga	ttctaattgga	960
gaagcaatac	aagaacaaaa	aaaatactac	gttgatgccta	gtgagttttt	aaatagaggt	1020
ttgacctttg	aggtatatgc	ttcgaatgac	tacgcactat	tatctaatac	cgtagatgat	1080

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aataaagttc atggtacacc tgttcagttt gtttttgata aagagaataa cggaattggt 1140
catcggggag aaagtgtact gctgaaaatg acgcaatcta actatgatga ttatgtatgt 1200
cttaattact ctaatatgac aaattgggta catcttgcca aacgaaaaac aaatactgca 1260
cagttttaaag tgtatccaaa tccggataac tcatctgaat atttcctata tacagatgga 1320
taccgggtaa attatcaaga aaatggtaat gggaagagct ggattgagtt aggaaagaaa 1380
acggataaac cgaaagcgtg gaaatttcaa caggcagaat aa 1422

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<210> 32
<211> 473
<212> PRT
<213> Unknown

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<220>
<223> Obtained from an environmental sample.

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<221> SIGNAL
<222> (1)...(20)

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<400> 32
Met Lys Lys Lys Leu Cys Thr Trp Ala Leu Val Thr Ala Ile Ser Ser
 1          5          10          15
Gly Val Val Ala Ile Pro Thr Val Ala Ser Ala Cys Gly Met Gly Glu
 20          25          30
Val Met Lys Gln Glu Asp Gln Glu His Lys Arg Val Lys Arg Trp Ser
 35          40          45
Ala Glu His Pro His His Ala Asn Glu Ser Thr His Leu Trp Ile Ala
 50          55          60
Arg Asn Ala Ile Gln Ile Met Ser Arg Asn Gln Asp Lys Thr Val Gln
 65          70          75          80
Glu Asn Glu Leu Gln Phe Leu Lys Ile Pro Glu Tyr Lys Glu Leu Phe
 85          90          95
Glu Arg Gly Leu Tyr Asp Ala Asp Tyr Leu Asp Glu Phe Asn Asp Gly
100          105          110
Gly Thr Gly Thr Ile Gly Ile Asp Gly Leu Ile Lys Gly Gly Trp Lys
115          120          125
Ser His Phe Tyr Asp Pro Asp Thr Lys Lys Asn Tyr Lys Gly Glu Glu
130          135          140
Glu Pro Thr Ala Leu Ser Gln Gly Asp Lys Tyr Phe Lys Leu Ala Gly
145          150          155          160
Asp Tyr Phe Lys Lys Glu Asp Trp Lys Gln Ala Phe Tyr Tyr Leu Gly
165          170          175
Val Ala Thr His Tyr Phe Thr Asp Ala Thr Gln Pro Met His Ala Ala
180          185          190
Asn Phe Thr Ala Val Asp Met Ser Ala Ile Lys Phe His Ser Ala Phe
195          200          205
Glu Asn Tyr Val Thr Thr Val Gln Thr Pro Phe Glu Val Lys Asp Asp
210          215          220
Lys Gly Thr Tyr Asn Leu Val Asn Ser Asp Asp Pro Lys Gln Trp Ile
225          230          235          240
His Glu Thr Ala Lys Leu Ala Lys Ala Glu Ile Met Asn Ile Thr Ser
245          250          255
Asp Asn Ile Lys Ser Gln Tyr Asn Lys Gly Asn Lys Asp Leu Trp Gln
260          265          270
Gln Glu Val Met Pro Ala Val Gln Arg Ser Leu Glu Lys Ala Gln Arg
275          280          285
Asn Thr Ala Gly Phe Ile His Leu Trp Phe Lys Thr Tyr Val Gly Lys
290          295          300
Thr Ala Ala Glu Asp Ile Glu Thr Thr Gln Val Lys Asp Ser Asn Gly
305          310          315          320

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tggtcggcg	acgtgccgga	gtggagcgaa	ggcgcgcgcc	cgtgtgcgcc	gcgccggcac	1260
ctgccgccga	cgccgccggg	ccgctccgag	gattcggcgc	gcttcggggc	cgagaaggcc	1320
gtcggcgagt	ggctcagttt	tgcgcgcgcg	aacatcacgc	gcctcatgtc	gcggaagccg	1380
ccgggttga						1389

<210> 36
 <211> 462
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 36

Met	Pro	Glu	Pro	Pro	Ala	Ala	Cys	Arg	Cys	Asp	Cys	Ala	Cys	Glu	Arg
1				5					10					15	
Asp	Gln	His	Leu	Phe	Cys	Lys	Gly	Pro	Lys	Arg	Ile	Leu	Ala	Leu	Asp
			20					25					30		
Gly	Gly	Gly	Val	Arg	Gly	Ala	Val	Ser	Val	Ala	Phe	Leu	Glu	Arg	Ile
		35					40					45			
Glu	Ala	Val	Leu	Glu	Ala	Arg	Leu	Gly	Arg	Lys	Val	Leu	Leu	Gly	His
	50					55					60				
Trp	Phe	Asp	Leu	Ile	Gly	Gly	Thr	Ser	Thr	Gly	Ala	Ile	Ile	Gly	Gly
65					70				75					80	
Ala	Leu	Ala	Met	Gly	Phe	Ala	Ala	Glu	Asp	Val	Gln	Arg	Phe	Tyr	His
			85						90					95	
Glu	Leu	Ala	Pro	Arg	Val	Phe	Arg	His	Pro	Leu	Leu	Arg	Ile	Gly	Leu
			100					105					110		
Leu	Arg	Pro	Phe	Arg	Ala	Lys	Phe	Asp	Ala	Arg	Leu	Leu	Arg	Glu	Glu
		115				120						125			
Ile	His	Arg	Ile	Ile	Gly	Asp	Ser	Thr	Leu	Gly	Asp	Lys	Ala	Leu	Met
130					135						140				
Thr	Gly	Phe	Ala	Leu	Val	Ala	Lys	Arg	Met	Asp	Thr	Gly	Ser	Thr	Trp
145					150					155					160
Ile	Leu	Ala	Asn	Asn	Lys	Arg	Ser	Lys	Tyr	Trp	Glu	Gly	Arg	Asp	Gly
			165						170					175	
Val	Val	Gly	Asn	Lys	Asp	Tyr	Leu	Leu	Gly	Ser	Leu	Ile	Arg	Ala	Ser
			180					185					190		
Thr	Ala	Ala	Pro	Leu	Tyr	Phe	Asp	Pro	Glu	Glu	Val	Val	Ile	Ala	Glu
	195						200					205			
Ala	Arg	Lys	Asp	Ile	Glu	Gly	Ile	Arg	Gly	Leu	Phe	Val	Asp	Gly	Gly
210					215						220				
Val	Thr	Pro	His	Asn	Asn	Pro	Ser	Leu	Ala	Met	Leu	Leu	Leu	Ala	Leu
225				230						235					240
Leu	Asp	Ala	Tyr	Arg	Leu	Arg	Trp	Glu	Thr	Gly	Pro	Asp	Lys	Leu	Thr
			245					250						255	
Val	Val	Ser	Ile	Gly	Thr	Gly	Thr	His	Arg	Asp	Arg	Val	Val	Pro	Asp
			260					265					270		
Thr	Leu	Gly	Met	Gly	Lys	Asn	Ala	Lys	Ile	Ala	Leu	Arg	Ala	Met	Ser
	275					280						285			
Ser	Leu	Met	Asn	Asp	Val	His	Glu	Leu	Ala	Leu	Thr	Gln	Met	Gln	Tyr
290					295						300				
Leu	Gly	Glu	Thr	Leu	Thr	Pro	Trp	Arg	Ile	Asn	Asp	Glu	Leu	Gly	Asp
305				310						315					320
Met	Arg	Thr	Glu	Arg	Pro	Pro	Gln	Gly	Lys	Leu	Phe	Arg	Phe	Leu	Arg
			325					330						335	
Tyr	Asp	Val	Arg	Leu	Glu	Leu	Asp	Trp	Ile	Asn	Glu	Asp	Glu	Glu	Arg
			340					345					350		
Arg	Arg	Lys	Ile	Lys	Asn	Lys	Phe	Lys	Arg	Glu	Leu	Thr	Glu	Thr	Asp

	355		360		365
Met	Ile Arg Leu Arg Ser	Leu Asp Asp Pro Thr	Thr Ile Pro Asp Leu		
	370	375	380		
Tyr	Met Leu Ala Gln Val	Ala Ala Glu Glu Gln	Val Lys Ala Glu His		
385		390	395		400
Trp	Leu Gly Asp Val	Pro Glu Trp Ser	Glu Gly Ala Arg Pro Cys Ala		
	405	410	415		
Pro	Arg Arg His Leu	Pro Pro Thr Pro	Pro Gly Arg Ser Glu Asp Ser		
	420	425	430		
Ala	Arg Phe Arg Ala Glu	Lys Ala Val Gly Glu	Trp Leu Ser Phe Ala		
	435	440	445		
Arg	Ala Asn Ile Thr Arg	Leu Met Ser Arg Lys	Pro Pro Gly		
	450	455	460		

<210> 37
 <211> 1329
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 37

atgagaaatt	tcagcaaggg	attgaccagt	atthttgctta	gcatagcgac	atccaccagt	60
gcatggcct	ttaccagat	cggggccggc	ggagcgattc	cgatgggcca	tgagtggcta	120
acccgccgt	cggcgctgga	actgctgaat	gccgacaatc	tggtcggcaa	tgaccgggcc	180
gaccacgct	tgggctggag	cgaaggtctc	gccaacaatc	tcgatctctc	gaatgccag	240
aacgaagtgc	agcgcatcaa	gagcattacc	aagagccacg	ccctgtatga	gccgcgttac	300
gatgacgttt	tcgcccgcct	cgtcggcgag	cgctgggttg	ataccgccgg	tttcaacgtg	360
gccaaggcca	ccgtcggcaa	gatcgattgc	ttcagcgccg	tcgcgcaaga	gcccgccgat	420
gtgcaacaag	accatttcat	gcgcggttat	gacgacgtgg	gtggacaagg	gggctgaac	480
gctgcccgcc	gcgcgcagca	gcgctttatc	aatcacttcg	tcaacgcagc	catggccgaa	540
gagaagagca	tcaaggcatg	ggatggcggc	ggttattctt	cgctggaaaa	agtcagccac	600
aactacttct	tgtttgcccg	cgccgttcat	ttgttccagg	attctttcag	ccccgaacac	660
accgtgcgc	tgctgaaga	caattacgtc	aaagtccgtc	aggtcaaggc	gtatctctgc	720
tctgaaggtg	ccgaacagca	tacgcacaac	acgcaagatg	ccatcaactt	caccagcggc	780
gatgtcatct	ggaaacagaa	caccgcgtctg	gatgcaggct	ggagcaccta	caaggccagc	840
aacatgaagc	cggtggcatt	ggttgccctc	gaagccagca	aagatttgtg	ggccgccttt	900
attcgcacca	tggccgtttc	ccgcgaggag	cgtcgcgccg	tcgccgaaca	ggaagcgcag	960
gctctcgtca	atcactgggt	gtcgttcgac	gaacaggaaa	tgctgaactg	gtacgaagaa	1020
gaagagcacc	gcgatcatac	gtacgtcaag	gaacccggcc	agagcggccc	aggttcgtcg	1080
ttattcgatt	gcatggttgg	tctgggtgtg	gcctcgggca	gtcaggcgca	acgggtggcg	1140
gaactcgatc	agcaacgccg	ccaatgtttg	ttcaacgtca	aggccgctac	tggctatggc	1200
gatctgaatg	atccacacat	ggatattccg	tacaactggc	aatgggtgtc	gtcgacgcaa	1260
tggaaaatcc	ctgcggccga	ctggaaaatc	ccgcagctgc	ccgccgattc	agggaaatca	1320
gtcgtcatc						1329

<210> 38
 <211> 443
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(23)

<400> 38

Met	Arg	Asn	Phe	Ser	Lys	Gly	Leu	Thr	Ser	Ile	Leu	Leu	Ser	Ile	Ala
1				5					10					15	
Thr	Ser	Thr	Ser	Ala	Met	Ala	Phe	Thr	Gln	Ile	Gly	Ala	Gly	Gly	Ala
			20					25					30		
Ile	Pro	Met	Gly	His	Glu	Trp	Leu	Thr	Arg	Arg	Ser	Ala	Leu	Glu	Leu
		35				40					45				
Leu	Asn	Ala	Asp	Asn	Leu	Val	Gly	Asn	Asp	Pro	Ala	Asp	Pro	Arg	Leu
	50				55					60					
Gly	Trp	Ser	Glu	Gly	Leu	Ala	Asn	Asn	Leu	Asp	Leu	Ser	Asn	Ala	Gln
65					70				75						80
Asn	Glu	Val	Gln	Arg	Ile	Lys	Ser	Ile	Thr	Lys	Ser	His	Ala	Leu	Tyr
			85					90						95	
Glu	Pro	Arg	Tyr	Asp	Asp	Val	Phe	Ala	Ala	Ile	Val	Gly	Glu	Arg	Trp
			100					105					110		
Val	Asp	Thr	Ala	Gly	Phe	Asn	Val	Ala	Lys	Ala	Thr	Val	Gly	Lys	Ile
		115					120					125			
Asp	Cys	Phe	Ser	Ala	Val	Ala	Gln	Glu	Pro	Ala	Asp	Val	Gln	Gln	Asp
	130					135				140					
His	Phe	Met	Arg	Arg	Tyr	Asp	Asp	Val	Gly	Gly	Gln	Gly	Gly	Val	Asn
145					150				155						160
Ala	Ala	Arg	Arg	Ala	Gln	Gln	Arg	Phe	Ile	Asn	His	Phe	Val	Asn	Ala
				165				170						175	
Ala	Met	Ala	Glu	Glu	Lys	Ser	Ile	Lys	Ala	Trp	Asp	Gly	Gly	Gly	Tyr
			180					185					190		
Ser	Ser	Leu	Glu	Lys	Val	Ser	His	Asn	Tyr	Phe	Leu	Phe	Gly	Arg	Ala
		195					200					205			
Val	His	Leu	Phe	Gln	Asp	Ser	Phe	Ser	Pro	Glu	His	Thr	Val	Arg	Leu
	210					215					220				
Pro	Glu	Asp	Asn	Tyr	Val	Lys	Val	Arg	Gln	Val	Lys	Ala	Tyr	Leu	Cys
225					230					235					240
Ser	Glu	Gly	Ala	Glu	Gln	His	Thr	His	Asn	Thr	Gln	Asp	Ala	Ile	Asn
			245					250						255	
Phe	Thr	Ser	Gly	Asp	Val	Ile	Trp	Lys	Gln	Asn	Thr	Arg	Leu	Asp	Ala
			260					265					270		
Gly	Trp	Ser	Thr	Tyr	Lys	Ala	Ser	Asn	Met	Lys	Pro	Val	Ala	Leu	Val
		275					280					285			
Ala	Leu	Glu	Ala	Ser	Lys	Asp	Leu	Trp	Ala	Ala	Phe	Ile	Arg	Thr	Met
	290					295					300				
Ala	Val	Ser	Arg	Glu	Glu	Arg	Arg	Ala	Val	Ala	Glu	Gln	Glu	Ala	Gln
305					310					315					320
Ala	Leu	Val	Asn	His	Trp	Leu	Ser	Phe	Asp	Glu	Gln	Glu	Met	Leu	Asn
			325					330						335	
Trp	Tyr	Glu	Glu	Glu	Glu	His	Arg	Asp	His	Thr	Tyr	Val	Lys	Glu	Pro
		340						345					350		
Gly	Gln	Ser	Gly	Pro	Gly	Ser	Ser	Leu	Phe	Asp	Cys	Met	Val	Gly	Leu
		355					360					365			
Gly	Val	Ala	Ser	Gly	Ser	Gln	Ala	Gln	Arg	Val	Ala	Glu	Leu	Asp	Gln
	370					375					380				
Gln	Arg	Arg	Gln	Cys	Leu	Phe	Asn	Val	Lys	Ala	Ala	Thr	Gly	Tyr	Gly
385					390					395					400
Asp	Leu	Asn	Asp	Pro	His	Met	Asp	Ile	Pro	Tyr	Asn	Trp	Gln	Trp	Val
			405					410						415	
Ser	Ser	Thr	Gln	Trp	Lys	Ile	Pro	Ala	Ala	Asp	Trp	Lys	Ile	Pro	Gln
		420					425						430		
Leu	Pro	Ala	Asp	Ser	Gly	Lys	Ser	Val	Val	Ile					
		435					440								

<210> 39

<211> 1335

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 39

atggccaacc	ccatcgatcat	catccacggc	tggagcgacg	acttcggctc	gttccgcaag	60
ctgcgcgact	tcctctccac	caacctcggc	gttccggcga	agatcctcaa	gctcggcgac	120
tggatctcgc	tcgacgacga	cgtcggctac	gccgacatcg	cgatggcgct	ggaacgcgcg	180
tggaaaggcg	agaaactgcc	gaccgcgccg	cgttcggctc	acgtcgtcgt	gcacagcacc	240
ggcgcgctgg	tgggtgcgca	atggatgacg	cgctaccacg	cgcccgaaac	cgtagccgatc	300
cagcgcttcc	tgcacctggc	gccggccaac	ttcggctcgc	acctcgcgca	caagggccgc	360
tcgttcatcg	gccgcgcggt	gaagggtg	aagaccggct	tcgaaaccgg	caccgcgcatc	420
ctgcgcgggc	tggaaactcg	ctcgccctac	tcgcgcgcgc	tggccgagcg	cgacctgttc	480
gtggcgccgt	cgaagcgctg	gtacggcgcc	ggccgcgcatc	tcgccaccgt	gctgggtcggc	540
aacagcggt	actccggcat	ccaggccatc	gccaacgagg	acgggtccga	cggcaccgtg	600
cgcctcgga	ccgccaacct	gcaggcggcg	cttgcggaag	tgggtgttccc	gcccggccccg	660
gtcgcgcgg	tgggtgcagtt	ccgcaacatc	gegggcgcca	ccgcgttcgc	catcgtcgac	720
ggcgacaacc	attccgacat	caccatgaag	gacaagccgt	cgaagaccgg	catccgcgag	780
gaactgatcc	tcggcgcgct	gaagggtgcg	gacgcgcgact	tccccgagaa	cgccgacggc	840
gcgttccccg	ggcaggcgaa	gctcgacgcg	aaggccgggtg	cggccaaggt	gtcttcgccc	900
gggcgccaga	acaccgtggt	gcacctcacc	gacagcttcg	gcgacgacgt	cgtagatttc	960
ttcttcgagt	tctggcgag	cgaacgcagc	gacaaggtgt	tcgagcagcg	cttctacaag	1020
gacgtcatcg	acgacgtgca	cgtgtacgac	ggcaacggcg	cgtggcgctc	gctcaacctc	1080
gacctcgaca	agttcgaggc	gctgcgcaag	gaccggaagc	tcggcttcga	gaaactgctg	1140
gtcagcggtg	tcgcctcgcc	cgcgaagaag	ggcgacgcca	aggtcggcta	cagcaccgcc	1200
accggccgcg	acatcggcgc	ctggcacgtc	gaaggccgtg	acttcgccaa	ggccttcacg	1260
ccgcaccgca	ccctgttcgt	cgacatcgag	atcccacgca	tcgtcgacga	cgcggtgttc	1320
cggttccggg	aatag					1335

<210> 40

<211> 444

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 40

Met	Ala	Asn	Pro	Ile	Val	Ile	Ile	His	Gly	Trp	Ser	Asp	Asp	Phe	Gly
1			5						10					15	
Ser	Phe	Arg	Lys	Leu	Arg	Asp	Phe	Leu	Ser	Thr	Asn	Leu	Gly	Val	Pro
			20					25					30		
Ala	Lys	Ile	Leu	Lys	Leu	Gly	Asp	Trp	Ile	Ser	Leu	Asp	Asp	Asp	Val
		35				40						45			
Gly	Tyr	Ala	Asp	Ile	Ala	Met	Ala	Leu	Glu	Arg	Ala	Trp	Lys	Ala	Glu
	50				55					60					
Lys	Leu	Pro	Thr	Ala	Pro	Arg	Ser	Val	Asp	Val	Val	Val	His	Ser	Thr
65				70					75					80	
Gly	Ala	Leu	Val	Val	Arg	Glu	Trp	Met	Thr	Arg	Tyr	His	Ala	Pro	Glu
			85					90						95	
Thr	Val	Pro	Ile	Gln	Arg	Phe	Leu	His	Leu	Ala	Pro	Ala	Asn	Phe	Gly
			100					105					110		
Ser	His	Leu	Ala	His	Lys	Gly	Arg	Ser	Phe	Ile	Gly	Arg	Ala	Val	Lys
		115				120						125			
Gly	Trp	Lys	Thr	Gly	Phe	Glu	Thr	Gly	Thr	Arg	Ile	Leu	Arg	Gly	Leu
	130					135					140				
Glu	Leu	Ala	Ser	Pro	Tyr	Ser	Arg	Ala	Leu	Ala	Glu	Arg	Asp	Leu	Phe

145		150		155		160									
Val	Ala	Pro	Ser	Lys	Arg	Trp	Tyr	Gly	Ala	Gly	Arg	Ile	Leu	Ala	Thr
				165				170						175	
Val	Leu	Val	Gly	Asn	Ser	Gly	Tyr	Ser	Gly	Ile	Gln	Ala	Ile	Ala	Asn
			180					185					190		
Glu	Asp	Gly	Ser	Asp	Gly	Thr	Val	Arg	Ile	Gly	Thr	Ala	Asn	Leu	Gln
		195				200						205			
Ala	Ala	Leu	Ala	Lys	Val	Val	Phe	Pro	Pro	Gly	Pro	Val	Ala	Pro	Val
	210					215					220				
Val	Gln	Phe	Arg	Asn	Ile	Ala	Gly	Ala	Thr	Ala	Phe	Ala	Ile	Val	Asp
225					230					235					240
Gly	Asp	Asn	His	Ser	Asp	Ile	Thr	Met	Lys	Asp	Lys	Pro	Ser	Lys	Thr
				245					250					255	
Gly	Ile	Arg	Glu	Glu	Leu	Ile	Leu	Gly	Ala	Leu	Lys	Val	Arg	Asp	Ala
		260						265					270		
Asp	Phe	Pro	Glu	Asn	Ala	Asp	Gly	Ala	Phe	Pro	Trp	Gln	Ala	Lys	Leu
	275					280						285			
Asp	Ala	Lys	Ala	Gly	Ala	Ala	Lys	Val	Ser	Ser	Pro	Gly	Arg	Gln	Asn
	290					295					300				
Thr	Val	Val	His	Leu	Thr	Asp	Ser	Phe	Gly	Asp	Asp	Val	Val	Asp	Phe
305					310					315					320
Phe	Phe	Glu	Phe	Trp	Arg	Ser	Glu	Arg	Ser	Asp	Lys	Val	Phe	Glu	Gln
				325					330					335	
Arg	Phe	Tyr	Lys	Asp	Val	Ile	Asp	Asp	Val	His	Val	Tyr	Asp	Gly	Asn
		340					345						350		
Gly	Ala	Trp	Arg	Ser	Leu	Asn	Leu	Asp	Leu	Asp	Lys	Phe	Glu	Ala	Leu
	355					360						365			
Arg	Lys	Asp	Pro	Lys	Leu	Gly	Phe	Glu	Lys	Leu	Leu	Val	Ser	Val	Phe
	370				375						380				
Ala	Ser	Pro	Ala	Lys	Lys	Gly	Asp	Ala	Lys	Val	Gly	Tyr	Ser	Thr	Ala
385					390					395					400
Thr	Gly	Arg	Asp	Ile	Gly	Ala	Trp	His	Val	Glu	Gly	Arg	Asp	Phe	Ala
			405					410					415		
Lys	Ala	Phe	Thr	Pro	His	Arg	Thr	Leu	Phe	Val	Asp	Ile	Glu	Ile	Pro
			420					425					430		
Arg	Ile	Val	Asp	Asp	Ala	Val	Phe	Arg	Phe	Arg	Glu				
	435					440									

<210> 41

<211> 1419

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 41

atgacgctcc	gatcaacgga	ctatgcgctg	ctggcgcagg	agagctacca	cgacagccag	60
gtggacgccg	acgtcaagct	ggatggcgctg	gcgtataaag	tcttcgccac	caccagcgac	120
gggctcaccg	gattccaggc	cacggcctac	cagcgccagg	acaccggcga	ggtagtgatt	180
gcgtaccgcg	gcacggagtt	tgatcgcgag	cccgctccgcg	acggcggcgt	cgatgcgggc	240
atggtgctgc	tcggtgtcaa	cgcacaggca	ccagcgctcg	aagtgttcac	ccggcaagtg	300
atcgagaagg	cgaaacacga	agccgagctc	aacgaccgcg	aaccgcagat	caccgtcacc	360
ggccattccc	tcggcggcac	cctcgccgag	atcaacgccg	cgaagtacgg	cctccatggc	420
gaaaccttca	acgcctacgg	cgcagccagc	ctcaagggta	ttccggaggg	cggcgatacc	480
gtcatcgacc	acgtccgtgc	cggcgatctc	gtcagcgcg	ccagcccca	ctacgggcag	540
gtacgcgtct	acgcggcgca	gcaggacatc	gatacgctgc	aacacgccg	ttaccgcgat	600
gacagcggca	tcctcagctt	gcgcaaccgc	atcaaggcca	cggatttcga	tgcccatgcc	660
atcgataact	tcgtgcccaa	cagcaagctg	ctcggtcagt	cgatcatcgc	gccggaaaac	720

gtggcgcggtt	acgatgcccc	caaaggcatg	gtcgaccggtt	accgcgatga	cgtggccgat	780
atccgcaagg	gcatctcggc	gccctgggaa	atccccaagg	ccatcggcga	gctgaaggac	840
accctggagc	acgaagcctt	cgaactcgcc	ggcaagggca	ttctcgcggt	ggagcacggc	900
ttcgaacatc	tcaaggagga	gatcggcgaa	ggcatccacg	ccgtggagga	gaaagcttcc	960
agcgcggtgg	ataccctcac	ccatcccaag	gaatggttcg	agcacgataa	acccaagggtg	1020
accctggacc	acccggacca	ccccgaccat	gccctgttca	agcaggcgca	gggcgcggtg	1080
cacacagtcg	atgcctcgca	cggccgcacc	cctgacaaga	ccagcgacca	gatcgccggc	1140
tcgctggtgg	tatcggcacg	ccgtgacggc	cttgagcggg	tagaccgcgc	tgtactcagc	1200
gatgacgcca	accgcctgta	cgggtgtgcag	ggtgcggtgg	actcgccgct	gaagcaggtc	1260
accgaagtga	acaccgccac	cgccgcgcag	acatcgctcc	agcagagcag	cgtggcctgg	1320
cagcaacagg	cagaaatcgc	gcgtcagaac	caggcgggcaa	gccagggtca	gcgcatggac	1380
cagcaggtgc	cgccgcaggc	acccgcgcac	ggcatgtaa			1419

<210> 42

<211> 472

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 42

Met	Thr	Leu	Arg	Ser	Thr	Asp	Tyr	Ala	Leu	Leu	Ala	Gln	Glu	Ser	Tyr
1				5					10					15	
His	Asp	Ser	Gln	Val	Asp	Ala	Asp	Val	Lys	Leu	Asp	Gly	Val	Ala	Tyr
			20					25					30		
Lys	Val	Phe	Ala	Thr	Thr	Ser	Asp	Gly	Leu	Thr	Gly	Phe	Gln	Ala	Thr
		35					40					45			
Ala	Tyr	Gln	Arg	Gln	Asp	Thr	Gly	Glu	Val	Val	Ile	Ala	Tyr	Arg	Gly
	50				55						60				
Thr	Glu	Phe	Asp	Arg	Glu	Pro	Val	Arg	Asp	Gly	Gly	Val	Asp	Ala	Gly
65					70				75					80	
Met	Val	Leu	Leu	Gly	Val	Asn	Ala	Gln	Ala	Pro	Ala	Ser	Glu	Val	Phe
			85					90					95		
Thr	Arg	Gln	Val	Ile	Glu	Lys	Ala	Lys	His	Glu	Ala	Glu	Leu	Asn	Asp
		100						105					110		
Arg	Glu	Pro	Gln	Ile	Thr	Val	Thr	Gly	His	Ser	Leu	Gly	Gly	Thr	Leu
		115					120					125			
Ala	Glu	Ile	Asn	Ala	Ala	Lys	Tyr	Gly	Leu	His	Gly	Glu	Thr	Phe	Asn
	130					135					140				
Ala	Tyr	Gly	Ala	Ala	Ser	Leu	Lys	Gly	Ile	Pro	Glu	Gly	Gly	Asp	Thr
145					150				155					160	
Val	Ile	Asp	His	Val	Arg	Ala	Gly	Asp	Leu	Val	Ser	Ala	Ala	Ser	Pro
			165					170						175	
His	Tyr	Gly	Gln	Val	Arg	Val	Tyr	Ala	Ala	Gln	Gln	Asp	Ile	Asp	Thr
		180						185					190		
Leu	Gln	His	Ala	Gly	Tyr	Arg	Asp	Asp	Ser	Gly	Ile	Leu	Ser	Leu	Arg
		195					200					205			
Asn	Pro	Ile	Lys	Ala	Thr	Asp	Phe	Asp	Ala	His	Ala	Ile	Asp	Asn	Phe
	210					215					220				
Val	Pro	Asn	Ser	Lys	Leu	Gly	Gln	Ser	Ile	Ile	Ala	Pro	Glu	Asn	
225				230					235					240	
Val	Ala	Arg	Tyr	Asp	Ala	His	Lys	Gly	Met	Val	Asp	Arg	Tyr	Arg	Asp
			245					250						255	
Asp	Val	Ala	Asp	Ile	Arg	Lys	Gly	Ile	Ser	Ala	Pro	Trp	Glu	Ile	Pro
		260					265						270		
Lys	Ala	Ile	Gly	Glu	Leu	Lys	Asp	Thr	Leu	Glu	His	Glu	Ala	Phe	Glu
		275					280					285			
Leu	Ala	Gly	Lys	Gly	Ile	Leu	Ala	Val	Glu	His	Gly	Phe	Glu	His	Leu

290		295		300
Lys Glu Glu Ile Gly	Glu Gly Ile His Ala Val	Glu Glu Lys Ala Ser		
305	310	315	320	
Ser Ala Trp His Thr	Leu Thr His Pro Lys Glu Trp Phe Glu His Asp			
	325	330	335	
Lys Pro Lys Val Thr	Leu Asp His Pro Asp His Pro Asp His Ala Leu			
	340	345	350	
Phe Lys Gln Ala Gln Gly	Ala Val His Thr Val Asp Ala Ser His Gly			
	355	360	365	
Arg Thr Pro Asp Lys Thr	Ser Asp Gln Ile Ala Gly Ser Leu Val Val			
	370	375	380	
Ser Ala Arg Arg Asp	Gly Leu Glu Arg Val Asp Arg Ala Val Leu Ser			
385	390	395	400	
Asp Asp Ala Asn Arg	Leu Tyr Gly Val Gln Gly Ala Val Asp Ser Pro			
	405	410	415	
Leu Lys Gln Val Thr	Glu Val Asn Thr Ala Thr Ala Ala Gln Thr Ser			
	420	425	430	
Leu Gln Gln Ser Ser	Val Ala Trp Gln Gln Gln Ala Glu Ile Ala Arg			
	435	440	445	
Gln Asn Gln Ala Ala	Ser Gln Ala Gln Arg Met Asp Gln Gln Val Pro			
	450	455	460	
Pro Gln Ala Pro Ala	His Gly Met			
465	470			

<210> 43

<211> 1287

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 43

atgtc	gatta	ccgttt	accg	gaagcc	cctcc	ggcggg	gtttg	gagcg	atagt	tcctc	aagcg	60
aaaatt	gaga	accttg	tttt	cgaggg	cggc	ggacca	aaag	gcctg	gtcta	tgctc	ggcgc	120
gtcga	gggtc	tcgggt	gaaa	gggact	gctg	gaaggg	atcg	caaatt	gtcg	cggcg	cttca	180
gcaggc	ccca	tgaccg	ctct	agccgt	cggt	ctggga	ctga	gcccc	aggg	aattc	gcgcg	240
gtcgt	cttta	accaga	acat	tgccg	acctc	accgat	atcg	agaaga	accgt	cgagc	cgctc	300
tccggg	atca	caggcat	gtt	caagag	cggtg	ttcaaga	aag	gttgg	caggc	ggtgc	gcaac	360
gtaacc	ggca	cctctg	acga	gcgcgg	ggcg	gggctc	tatc	gcggcg	agaa	gttgc	gagcc	420
tggatc	agag	acctgat	tgc	acagcg	agtc	gaggc	aggg	gctcag	aggt	gctga	gccga	480
gccgac	gccg	acgggc	ggaa	cttctat	gag	aaagcc	gccg	caaaga	aagg	cgccct	gaca	540
tttgcc	gaac	ttgatc	gggt	ggcgca	aatg	gcgcgg	ggcc	tgccg	gttcg	ccgcct	ggcc	600
ttcacc	ggaa	ccaact	tcac	gtcga	agaag	ctcga	agtgt	tcagt	ctgca	cgagac	ccccg	660
gacatg	ccga	tcgacg	tcgc	ggta	cgcac	tcggc	atcgt	tgccat	gggt	tttcaa	atcc	720
gtgaa	atgga	acggct	ccga	atacat	agat	ggcgg	atgcc	tgctc	gaactt	cccaat	gccg	780
atattc	gacg	tcgatc	cccta	tcgtg	ggcg	gcacg	tcga	agatc	ccggct	cggcac	cttc	840
ggccag	aacc	tcgcg	acgt	cggctt	caag	gtcgac	agcg	aggagg	agat	ccgcg	acatc	900
ctctg	gcgta	gcccc	gagag	cacgag	cgac	ggcttt	ttcc	aaggca	tcct	gtcaag	cggtg	960
aaagc	ctcg	cagaac	actg	ggtcgt	ccgg	atcgat	gtcg	agggc	gccac	ccgcg	cgctc	1020
aacgt	ggcc	ttcac	ggcaa	gtatg	ctcag	cgaac	gatcc	agata	accgga	cctcg	gatata	1080
agcac	gttca	agttc	gatct	ctcag	acg	gacaag	gagc	gcatg	ggccga	ggccg	gcgca	1140
aaggcc	acgc	gggaat	ggct	ggcgt	gtac	ttcgac	gcgac	ccgga	ataga	ggtcga	aattt	1200
tctgat	ccga	acgaat	tgcg	cgccag	gttg	tccgac	gccg	cattc	gcaga	cctcg	aggat	1260
tcgttt	tcgag	ccttgat	tcgc	ggcct	ag							1287

<210> 44

<211> 428

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 44

Met	Ser	Ile	Thr	Val	Tyr	Arg	Lys	Pro	Ser	Gly	Gly	Phe	Gly	Ala	Ile
1				5				10						15	
Val	Pro	Gln	Ala	Lys	Ile	Glu	Asn	Leu	Val	Phe	Glu	Gly	Gly	Gly	Pro
			20				25						30		
Lys	Gly	Leu	Val	Tyr	Val	Gly	Ala	Val	Glu	Val	Leu	Gly	Glu	Arg	Gly
		35					40					45			
Leu	Leu	Glu	Gly	Ile	Ala	Asn	Val	Gly	Gly	Ala	Ser	Ala	Gly	Ala	Met
	50					55					60				
Thr	Ala	Leu	Ala	Val	Gly	Leu	Gly	Leu	Ser	Pro	Arg	Glu	Ile	Arg	Ala
65					70					75					80
Val	Val	Phe	Asn	Gln	Asn	Ile	Ala	Asp	Leu	Thr	Asp	Ile	Glu	Lys	Thr
			85						90					95	
Val	Glu	Pro	Ser	Ser	Gly	Ile	Thr	Gly	Met	Phe	Lys	Ser	Val	Phe	Lys
			100					105					110		
Lys	Gly	Trp	Gln	Ala	Val	Arg	Asn	Val	Thr	Gly	Thr	Ser	Asp	Glu	Arg
	115						120					125			
Gly	Arg	Gly	Leu	Tyr	Arg	Gly	Glu	Lys	Leu	Arg	Ala	Trp	Ile	Arg	Asp
130						135					140				
Leu	Ile	Ala	Gln	Arg	Val	Glu	Ala	Gly	Arg	Ser	Glu	Val	Leu	Ser	Arg
145					150					155					160
Ala	Asp	Ala	Asp	Gly	Arg	Asn	Phe	Tyr	Glu	Lys	Ala	Ala	Ala	Lys	Lys
				165					170					175	
Gly	Ala	Leu	Thr	Phe	Ala	Glu	Leu	Asp	Arg	Val	Ala	Gln	Met	Ala	Pro
			180					185					190		
Gly	Leu	Arg	Leu	Arg	Arg	Leu	Ala	Phe	Thr	Gly	Thr	Asn	Phe	Thr	Ser
	195					200						205			
Lys	Lys	Leu	Glu	Val	Phe	Ser	Leu	His	Glu	Thr	Pro	Asp	Met	Pro	Ile
210						215					220				
Asp	Val	Ala	Val	Arg	Ile	Ser	Ala	Ser	Leu	Pro	Trp	Phe	Phe	Lys	Ser
225					230					235					240
Val	Lys	Trp	Asn	Gly	Ser	Glu	Tyr	Ile	Asp	Gly	Gly	Cys	Leu	Ser	Asn
			245						250					255	
Phe	Pro	Met	Pro	Ile	Phe	Asp	Val	Asp	Pro	Tyr	Arg	Gly	Asp	Ala	Ser
			260					265					270		
Ser	Lys	Ile	Arg	Leu	Gly	Ile	Phe	Gly	Gln	Asn	Leu	Ala	Thr	Leu	Gly
		275					280					285			
Phe	Lys	Val	Asp	Ser	Glu	Glu	Ile	Arg	Asp	Ile	Leu	Trp	Arg	Ser	
	290					295				300					
Pro	Glu	Ser	Thr	Ser	Asp	Gly	Phe	Phe	Gln	Gly	Ile	Leu	Ser	Ser	Val
305					310					315					320
Lys	Ala	Ser	Ala	Glu	His	Trp	Val	Val	Gly	Ile	Asp	Val	Glu	Gly	Ala
				325					330					335	
Thr	Arg	Ala	Ser	Asn	Val	Ala	Val	His	Gly	Lys	Tyr	Ala	Gln	Arg	Thr
			340					345					350		
Ile	Gln	Ile	Pro	Asp	Leu	Gly	Tyr	Ser	Thr	Phe	Lys	Phe	Asp	Leu	Ser
		355					360					365			
Asp	Ala	Asp	Lys	Glu	Arg	Met	Ala	Glu	Ala	Gly	Ala	Lys	Ala	Thr	Arg
	370					375					380				
Glu	Trp	Leu	Ala	Leu	Tyr	Phe	Asp	Asp	Ala	Gly	Ile	Glu	Val	Glu	Phe
385					390					395					400
Ser	Asp	Pro	Asn	Glu	Leu	Arg	Gly	Gln	Leu	Ser	Asp	Ala	Ala	Phe	Ala
				405					410					415	
Asp	Leu	Glu	Asp	Ser	Phe	Arg	Ala	Leu	Ile	Ala	Ala				

<210> 45
 <211> 1038
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 45
 atgacaaccc aatttagaaa cttgatatTTT gaaggcgggc gtgtaaaagg tgttgcttac 60
 attggcgcca tgcagattct cgaaaatcgt ggcgtgttgc aagatattca ccgagtcgga 120
 ggggtgcagt cgggtgcatg taatgcgctg atttttgcgc tgggttacac ggttcgtgag 180
 caaaaagaga tcttacaagc caccgatttt aaccagttta tggataactc ttgggggtgtt 240
 attcgtgata ttcgcaggct tgctcgagac tttggctgga ataagggtga tttctttagt 300
 agctggatag gtgatttgat tcatcgtcgt ttgggggaatc gccgagcgac gttcaaagat 360
 ctgcaaaatg ccaagcttcc tgatctttat gtcatcggta ctaatctgtc tacagggttt 420
 gcagaggttt tttctgccga aagacacccc gatatggagc tggcgacagc ggtgcgtatc 480
 tccatgtcga taccgtgtt ctttgcagcc gtgcgtcacg gtgatcgaca agatgtgtat 540
 gtcgatgggg gtgttcaact taactatccg attaaactgt ttgatcggga gcgttacatt 600
 gatctggcca aagatcccgg tgctgttcgg cgaacggggt attacaacaa agaaaacgct 660
 cgctttcagc ttgagcggcc cggtcatagc ccctatgttt acaatcgcca gaccttgggt 720
 ttgcgtcttg atagtcgcga gcagataggg ctctttcgtt atgacgaacc cctcaagggc 780
 aaaccatta agtccttcac tgactacgct cgacaacttt tcggtgcgtt gatgaatgca 840
 caggaaaaga ttcacttaca tggcgatgat tggcaacgca cgggtctatat cgatacattg 900
 gatgtgggta cgacggactt caatctttct gatgcaacta agcaagcact gattgagcaa 960
 ggaattaacg gcaccgaaaa ttatttcgag tggtttgata atccgttaga gaagcccgtg 1020
 aatagagtgg agtcatag 1038

<210> 46
 <211> 345
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 46
 Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
 1 5 10 15
 Gly Val Ala Tyr Ile Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
 20 25 30
 Leu Gln Asp Ile His Arg Val Gly Cys Ser Ala Gly Ala Ile Asn
 35 40 45
 Ala Leu Ile Phe Ala Leu Gly Tyr Thr Val Arg Glu Gln Lys Glu Ile
 50 55 60
 Leu Gln Ala Thr Asp Phe Asn Gln Phe Met Asp Asn Ser Trp Gly Val
 65 70 75 80
 Ile Arg Asp Ile Arg Arg Leu Ala Arg Asp Phe Gly Trp Asn Lys Gly
 85 90 95
 Asp Phe Phe Ser Trp Ile Gly Asp Leu Ile His Arg Arg Leu Gly
 100 105 110
 Asn Arg Arg Ala Thr Phe Lys Asp Leu Gln Asn Ala Lys Leu Pro Asp
 115 120 125
 Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ala Glu Val Phe
 130 135 140
 Ser Ala Glu Arg His Pro Asp Met Glu Leu Ala Thr Ala Val Arg Ile
 145 150 155 160

Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Val Arg His Gly Asp Arg
 165 170 175
 Gln Asp Val Tyr Val Asp Gly Gly Val Gln Leu Asn Tyr Pro Ile Lys
 180 185 190
 Leu Phe Asp Arg Glu Arg Tyr Ile Asp Leu Ala Lys Asp Pro Gly Ala
 195 200 205
 Val Arg Arg Thr Gly Tyr Tyr Asn Lys Glu Asn Ala Arg Phe Gln Leu
 210 215 220
 Glu Arg Pro Gly His Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
 225 230 235 240
 Leu Arg Leu Asp Ser Arg Glu Gln Ile Gly Leu Phe Arg Tyr Asp Glu
 245 250 255
 Pro Leu Lys Gly Lys Pro Ile Lys Ser Phe Thr Asp Tyr Ala Arg Gln
 260 265 270
 Leu Phe Gly Ala Leu Met Asn Ala Gln Glu Lys Ile His Leu His Gly
 275 280 285
 Asp Asp Trp Gln Arg Thr Val Tyr Ile Asp Thr Leu Asp Val Gly Thr
 290 295 300
 Thr Asp Phe Asn Leu Ser Asp Ala Thr Lys Gln Ala Leu Ile Glu Gln
 305 310 315 320
 Gly Ile Asn Gly Thr Glu Asn Tyr Phe Glu Trp Phe Asp Asn Pro Leu
 325 330 335
 Glu Lys Pro Val Asn Arg Val Glu Ser
 340 345

<210> 47

<211> 1476

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 47

atgtcaacaa	aagtagtatt	tgtacatgga	tggagcgtta	ccaacctaaa	tacatatggc	60
gaacttccgt	tgagattaaa	ggccgaagca	ataagcagga	acctgaacat	cgaagtaaat	120
gaaattttcc	tgggcccgtta	tatcagcttt	aatgataaca	ttacattaga	tgacgtttcg	180
cgggctttta	atacggccat	tagcgaacag	ttagacaata	cagacagggt	tatatgtatt	240
acacattcta	ccggagggcc	ggttattcgc	gaatgggttaa	ataaatacta	ttataatgaa	300
cgtccaccac	taagtcattt	aataatgctt	gcaccggcca	atthttggttc	ggcattgggt	360
cgttttaggga	aaagtaaaatt	aagccgtatt	aaaagttggt	ttgaaggtgt	agaaccaggg	420
cagaaaattt	tagactggct	ggagtgtgga	agcaaccaat	cgtgggttact	aaataaaagac	480
tggatcgaca	atggcaattt	tcagattggc	gctgataagt	atthcccgtt	tggtatcatt	540
ggccagtcga	ttgatcgtaa	actttacgat	catcttaact	catataccgg	cgagcttggg	600
tccgatgggtg	tagttcgcac	ctcaggagct	aatcttaatt	cgcggtatat	taagcttggt	660
caggacagaa	atacaatagc	taatggaaat	atthccagta	cattacgaat	tgccgaatat	720
agagaagctt	gtgcaacgcc	catacgggta	gtagagggta	aatcgcatte	gggcgatgaa	780
atgggtatca	tgaaaagtgt	taaaaaagaa	attactgatg	ccggaagcaa	ggaaacaata	840
aatgccatat	tcgagtgtat	tgaagttaca	aacaacgaac	aatatcaatc	cttaattact	900
aaatttgata	acgaaacagc	acaggtacaa	aaggatgagc	tgattgaaac	ggaaacagaa	960
ttatttttaa	tgcaccgtca	tttcattcac	gaccgctttt	cgcaattcat	ttttaaagta	1020
actgactcag	aaggggcaacc	tggttacagat	tatgatttaa	tttttacagc	cggggccacaa	1080
aacgatgcga	accacttacc	ggaaggattt	gccattgaca	ggcaacaaaa	ttcaaataat	1140
aacgaaacca	ttacgtatta	ttttaattac	gatgtattga	aaggggctcc	cgcaaatggt	1200
taccgggacg	cattaccagg	tatttctatg	ctggggctaa	ccataaaccc	aaggccggac	1260
gaaggttttg	taagatatat	cccatgcagc	attaaagcca	attccgaggt	gatggaaaaa	1320
gccttttaaac	caaattctac	taccttggtc	gatattgtta	ttcaacgtgt	agttagcaaa	1380
gaagtttttc	ggttggaaaa	gttaactggt	agctcaatgc	caacagacaa	agatgggaat	1440
tttaaaaata	ctgaacctgg	taacgaaata	atatga			1476

<210> 48
 <211> 491
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 48
 Met Ser Thr Lys Val Val Phe Val His Gly Trp Ser Val Thr Asn Leu
 1 5 10 15
 Asn Thr Tyr Gly Glu Leu Pro Leu Arg Leu Lys Ala Glu Ala Ile Ser
 20 25 30
 Arg Asn Leu Asn Ile Glu Val Asn Glu Ile Phe Leu Gly Arg Tyr Ile
 35 40 45
 Ser Phe Asn Asp Asn Ile Thr Leu Asp Asp Val Ser Arg Ala Phe Asn
 50 55 60
 Thr Ala Ile Ser Glu Gln Leu Asp Asn Thr Asp Arg Phe Ile Cys Ile
 65 70 75 80
 Thr His Ser Thr Gly Gly Pro Val Ile Arg Glu Trp Leu Asn Lys Tyr
 85 90 95
 Tyr Tyr Asn Glu Arg Pro Pro Leu Ser His Leu Ile Met Leu Ala Pro
 100 105 110
 Ala Asn Phe Gly Ser Ala Leu Ala Arg Leu Gly Lys Ser Lys Leu Ser
 115 120 125
 Arg Ile Lys Ser Trp Phe Glu Gly Val Glu Pro Gly Gln Lys Ile Leu
 130 135 140
 Asp Trp Leu Glu Cys Gly Ser Asn Gln Ser Trp Leu Leu Asn Lys Asp
 145 150 155 160
 Trp Ile Asp Asn Gly Asn Phe Gln Ile Gly Ala Asp Lys Tyr Phe Pro
 165 170 175
 Phe Val Ile Ile Gly Gln Ser Ile Asp Arg Lys Leu Tyr Asp His Leu
 180 185 190
 Asn Ser Tyr Thr Gly Glu Leu Gly Ser Asp Gly Val Val Arg Thr Ser
 195 200 205
 Gly Ala Asn Leu Asn Ser Arg Tyr Ile Lys Leu Val Gln Asp Arg Asn
 210 215 220
 Thr Ile Ala Asn Gly Asn Ile Ser Ser Thr Leu Arg Ile Ala Glu Tyr
 225 230 235 240
 Arg Glu Ala Cys Ala Thr Pro Ile Arg Val Val Arg Gly Lys Ser His
 245 250 255
 Ser Gly Asp Glu Met Gly Ile Met Lys Ser Val Lys Lys Glu Ile Thr
 260 265 270
 Asp Ala Gly Ser Lys Glu Thr Ile Asn Ala Ile Phe Glu Cys Ile Glu
 275 280 285
 Val Thr Asn Asn Glu Gln Tyr Gln Ser Leu Ile Thr Lys Phe Asp Asn
 290 295 300
 Glu Thr Ala Gln Val Gln Lys Asp Glu Leu Ile Glu Thr Glu Thr Glu
 305 310 315 320
 Leu Phe Leu Met His Arg His Phe Ile His Asp Arg Phe Ser Gln Phe
 325 330 335
 Ile Phe Lys Val Thr Asp Ser Glu Gly Gln Pro Val Thr Asp Tyr Asp
 340 345 350
 Leu Ile Phe Thr Ala Gly Pro Gln Asn Asp Ala Asn His Leu Pro Glu
 355 360 365
 Gly Phe Ala Ile Asp Arg Gln Gln Asn Ser Asn Asn Asn Glu Thr Ile
 370 375 380
 Thr Tyr Tyr Phe Asn Tyr Asp Val Leu Lys Gly Ala Pro Ala Asn Val

385 390 395 400
 Tyr Arg Asp Ala Leu Pro Gly Ile Ser Met Leu Gly Leu Thr Ile Asn
 405 410 415
 Pro Arg Pro Asp Glu Gly Phe Val Arg Tyr Ile Pro Cys Ser Ile Lys
 420 425 430
 Ala Asn Ser Glu Leu Met Glu Lys Ala Phe Lys Pro Asn Ser Thr Thr
 435 440 445
 Leu Val Asp Ile Val Ile Gln Arg Val Val Ser Lys Glu Val Phe Arg
 450 455 460
 Leu Glu Lys Leu Thr Gly Ser Ser Met Pro Thr Asp Lys Asp Gly Asn
 465 470 475 480
 Phe Lys Asn Thr Glu Pro Gly Asn Glu Ile Ile
 485 490

<210> 49
 <211> 1257
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 49
 atgaattttt ggtccttttct tcttagtata accttaccta tgggggtagg cgttgctcat 60
 gcacagcccg atacggattt tcaatcggct gagccttatg tctcttctgc gccaatgggg 120
 cgacaaactt atacttacgt gcgttggttg tatcgcacca gccacagtac ggatgatcca 180
 gcgacagatt ggcagtgggc gagaaactcc gatggtagct attttacttt gcaaggatac 240
 tgggtggagct cggtaagact aaaaaatatg ttttacctc aaacctcgca aaatggtatt 300
 cgtcagcgct gcgaacacac tttaagcatt aatcatgata atgcggatat tactttttat 360
 gcggcgata atcgtttctc attaaaccat acgatttggt cgaatgatcc tgtcatgcag 420
 gctaatacaa tcaacaagat tgtcgcgttt ggtgacagct tgtccgatac cggtaatat 480
 tttaatgccg cgcagtggcg ttttctaat cccaatagtt ggtttttggg gcatttttct 540
 aacggtttgg tatggactga gtacttagct aaacagaaaa acttaccgat atataactgg 600
 gcggttggtg gcgctgctgg ggcgaatcaa tatgtggcgt taaccgggtg tacaggccaa 660
 gtgaactctt atttacagta catgggtaaa gcgcaaaact atcgccaca gaataccttg 720
 tacactttgg tcttcggttt gaatgatttt atgaattata accgtgaggt tgctgaggtg 780
 gcggctgatt ttgaaacggc attacagcgt ttaacgcaag ctggcgcgca aaatatttta 840
 atgatgacgc taccggatgt gactaaagca ccacagttaa cctactcaac tcaagcggaa 900
 atcgacttga ttcaaggtaa aatcaatgcg ttgaacatca agttaaaaca gttgactgcg 960
 caatatattt tacaaggcta tgccattcat ctatttgata cttatgagtt atttgattca 1020
 atggtcgcgtg aaccggaaaa gcatggcttt gctaatgcca gtgaaccttg tttgaatctc 1080
 acccgttctt cagcggcgga ttatttgtac cgtcatccca ttaccaatac ttgtgctcgt 1140
 tatggtgcag acaaatttgt attttgggat gtcacccatc caaccacggc aactcatcgc 1200
 tatatttcac aaacgctggt agcgcgggt aatggattac aatattttta ttttta 1257

<210> 50
 <211> 418
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(23)

<400> 50
 Met Asn Phe Trp Ser Phe Leu Leu Ser Ile Thr Leu Pro Met Gly Val
 1 5 10 15

Gly	Val	Ala	His	Ala	Gln	Pro	Asp	Thr	Asp	Phe	Gln	Ser	Ala	Glu	Pro	20	25	30
Tyr	Val	Ser	Ser	Ala	Pro	Met	Gly	Arg	Gln	Thr	Tyr	Thr	Tyr	Val	Arg	35	40	45
Cys	Trp	Tyr	Arg	Thr	Ser	His	Ser	Thr	Asp	Asp	Pro	Ala	Thr	Asp	Trp	50	55	60
Gln	Trp	Ala	Arg	Asn	Ser	Asp	Gly	Ser	Tyr	Phe	Thr	Leu	Gln	Gly	Tyr	65	70	75
Trp	Trp	Ser	Ser	Val	Arg	Leu	Lys	Asn	Met	Phe	Tyr	Thr	Gln	Thr	Ser	85	90	95
Gln	Asn	Val	Ile	Arg	Gln	Arg	Cys	Glu	His	Thr	Leu	Ser	Ile	Asn	His	100	105	110
Asp	Asn	Ala	Asp	Ile	Thr	Phe	Tyr	Ala	Ala	Asp	Asn	Arg	Phe	Ser	Leu	115	120	125
Asn	His	Thr	Ile	Trp	Ser	Asn	Asp	Pro	Val	Met	Gln	Ala	Asn	Gln	Ile	130	135	140
Asn	Lys	Ile	Val	Ala	Phe	Gly	Asp	Ser	Leu	Ser	Asp	Thr	Gly	Asn	Ile	145	150	155
Phe	Asn	Ala	Ala	Gln	Trp	Arg	Phe	Pro	Asn	Pro	Asn	Ser	Trp	Phe	Leu	165	170	175
Gly	His	Phe	Ser	Asn	Gly	Leu	Val	Trp	Thr	Glu	Tyr	Leu	Ala	Lys	Gln	180	185	190
Lys	Asn	Leu	Pro	Ile	Tyr	Asn	Trp	Ala	Val	Gly	Gly	Ala	Ala	Gly	Ala	195	200	205
Asn	Gln	Tyr	Val	Ala	Leu	Thr	Gly	Val	Thr	Gly	Gln	Val	Asn	Ser	Tyr	210	215	220
Leu	Gln	Tyr	Met	Gly	Lys	Ala	Gln	Asn	Tyr	Arg	Pro	Gln	Asn	Thr	Leu	225	230	235
Tyr	Thr	Leu	Val	Phe	Gly	Leu	Asn	Asp	Phe	Met	Asn	Tyr	Asn	Arg	Glu	245	250	255
Val	Ala	Glu	Val	Ala	Ala	Asp	Phe	Glu	Thr	Ala	Leu	Gln	Arg	Leu	Thr	260	265	270
Gln	Ala	Gly	Ala	Gln	Asn	Ile	Leu	Met	Met	Thr	Leu	Pro	Asp	Val	Thr	275	280	285
Lys	Ala	Pro	Gln	Phe	Thr	Tyr	Ser	Thr	Gln	Ala	Glu	Ile	Asp	Leu	Ile	290	295	300
Gln	Gly	Lys	Ile	Asn	Ala	Leu	Asn	Ile	Lys	Leu	Lys	Gln	Leu	Thr	Ala	305	310	315
Gln	Tyr	Ile	Leu	Gln	Gly	Tyr	Ala	Ile	His	Leu	Phe	Asp	Thr	Tyr	Glu	325	330	335
Leu	Phe	Asp	Ser	Met	Val	Ala	Glu	Pro	Glu	Lys	His	Gly	Phe	Ala	Asn	340	345	350
Ala	Ser	Glu	Pro	Cys	Leu	Asn	Leu	Thr	Arg	Ser	Ser	Ala	Ala	Asp	Tyr	355	360	365
Leu	Tyr	Arg	His	Pro	Ile	Thr	Asn	Thr	Cys	Ala	Arg	Tyr	Gly	Ala	Asp	370	375	380
Lys	Phe	Val	Phe	Trp	Asp	Val	Thr	His	Pro	Thr	Thr	Ala	Thr	His	Arg	385	390	395
Tyr	Ile	Ser	Gln	Thr	Leu	Leu	Ala	Pro	Gly	Asn	Gly	Leu	Gln	Tyr	Phe	405	410	415
Asn	Phe																	

<210> 51
 <211> 1482
 <212> DNA
 <213> Unknown

 <220>

<223> Obtained from an environmental sample.

<400> 51

atgacaatcc	gctcaacgga	ctatgcgctg	ctcgcgcagg	agagctacca	cgacagccag	60
gtcgatgccg	acgtcaaact	cgatggcatc	gcctacaagg	tcttcgccac	caccgatgac	120
ccgctcacgg	ggttccaggc	caccgcgtac	cagcgccagg	acaccggcga	agtcgtcatc	180
gcctatcgtg	gtacggaatt	cgaccgcgag	cccgttcgcg	acggcggcgt	cgatgccggc	240
atggtgctgc	tgggggtgaa	tgcccagtcg	cctgcctccg	agctatttac	ccgcgaagtg	300
atcgagaagg	cgacgcacga	agccgaactc	aatgaccgcg	agccccggat	caccgtgact	360
ggccactccc	tcggcggcac	cctcgccgaa	atcaacgcgg	ccaagtacgg	cctgcacggc	420
gaaaccttca	acgcatacgg	tgcggccagc	ctcaagggca	tcccgggaagg	cggcaatacc	480
gtgatcgacc	acgtgcgcgc	tggcgacctc	gtcagcgccg	ccagcccgca	ttacgggcag	540
gtgcgcgtct	acgcggccca	gcaggatata	gacaccttgc	agcatgccgg	ctaccgcgac	600
gacagcggca	tccttagcct	gcgcaaccgc	atcaaggcca	cggatttcga	cgcgcacgcc	660
atcgacaact	tcgtgcggaa	cagcaaaactg	cttggccagt	cgatcatcgc	gccggaaaac	720
gaagcccgtt	acgaagccca	caagggcgatg	gtcgaccgct	accgcgatga	cgtggctgac	780
atccgcgatgc	tcgtctccgc	tcccctgaac	atccgcgcga	ccatcggcga	tatcaaggat	840
gccgtggaac	gcgaggcatt	tgagctggct	ggcaagggca	tcctcgccgt	tgaacacggc	900
atcgaagagg	tcgtgcacga	ggcaaaggaa	ggcttcgagc	acctcaagga	aggctttgag	960
cacctgaagg	aagaagtcag	cgagggccttc	catgccttcg	aggaaaaggc	ctccagcgcg	1020
tggcatacgc	tgacctatcc	caaggaatgg	ttcgagcacg	acaagccgca	ggtgcgccctg	1080
aaccacccac	agcaccgcga	caacgaactg	ttcaagaagg	tgctcgaagg	cgtgcaccag	1140
gttgatgcga	agcagggtcg	ttcaccgcgac	cagctcagtg	agaacctggc	cgcctcgttt	1200
accgttgccg	cacgcaagga	aggcctggac	aaggctcaacc	acgtgctgct	cgacgacccc	1260
ggcattcgca	cctacgccgt	gcagggtgag	ctcaactcgc	cgttgaagca	ggtctccagt	1320
gtcgataacg	cccaggcggt	cgccacaccg	gtggcccaga	gcagcgcgca	atggcagcag	1380
gctgccgagg	cgcggcgaggc	acagcacaat	gaggcgcttg	cgcagcagca	ggcgcaacag	1440
cagcagaaca	accggcccaa	ccatgggggtt	gccggcccgt	ga		1482

<210> 52

<211> 493

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 52

Met	Thr	Ile	Arg	Ser	Thr	Asp	Tyr	Ala	Leu	Leu	Ala	Gln	Glu	Ser	Tyr
1				5					10					15	
His	Asp	Ser	Gln	Val	Asp	Ala	Asp	Val	Lys	Leu	Asp	Gly	Ile	Ala	Tyr
			20					25					30		
Lys	Val	Phe	Ala	Thr	Thr	Asp	Asp	Pro	Leu	Thr	Gly	Phe	Gln	Ala	Thr
		35				40					45				
Ala	Tyr	Gln	Arg	Gln	Asp	Thr	Gly	Glu	Val	Val	Ile	Ala	Tyr	Arg	Gly
	50				55						60				
Thr	Glu	Phe	Asp	Arg	Glu	Pro	Val	Arg	Asp	Gly	Gly	Val	Asp	Ala	Gly
65					70				75					80	
Met	Val	Leu	Leu	Gly	Val	Asn	Ala	Gln	Ser	Pro	Ala	Ser	Glu	Leu	Phe
			85					90					95		
Thr	Arg	Glu	Val	Ile	Glu	Lys	Ala	Thr	His	Glu	Ala	Glu	Leu	Asn	Asp
			100				105						110		
Arg	Glu	Pro	Arg	Ile	Thr	Val	Thr	Gly	His	Ser	Leu	Gly	Gly	Thr	Leu
		115					120					125			
Ala	Glu	Ile	Asn	Ala	Ala	Lys	Tyr	Gly	Leu	His	Gly	Glu	Thr	Phe	Asn
	130					135					140				
Ala	Tyr	Gly	Ala	Ala	Ser	Leu	Lys	Gly	Ile	Pro	Glu	Gly	Gly	Asn	Thr
145					150					155				160	
Val	Ile	Asp	His	Val	Arg	Ala	Gly	Asp	Leu	Val	Ser	Ala	Ala	Ser	Pro


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gcattggaagc taaacaccga ctggattaag agtgatggaa gtcagatctc ggcacagggc 540
atttttcctt ttgtgatcat aggtcaggac attgaccgca aattatacga tcattttaa 600
tcctacaccg gtgagctggg ttccgacggc gtgggtgcgtt cggccgcagc caattttaa 660
gctacttatg taaaactcac acaacctaaa cccaccttgg taaatggaaa actggtaaca 720
ggtaatctgg aaataggaga agtaaaacaa gcgccttata caccatgcg catcgtctca 780
aaaaaatcgc attccaacaa ggatatggga attatgagaa gtgtactgaa atcaacaaat 840
gatgccaaca gcgccgaaac ggtaaacgcc atttttgact gcattaatgt gaaaacctta 900
accgattacc agagcattgc cacacagttt gattcgcaaa caaaagacgt gcaggaaaat 960
tcaattattg aaagggaaaa aacgcccttt ggaactaaaa actatattca cgaccgtttc 1020
tcccagggtc ttttcagagt aacagacagt gaaggttacc cggttaccag ttttgatctg 1080
atcctcaccg gcggcgaaaa aaatgatccc aacgccttgc ctcagggctt tttgtggac 1140
agacaatgca acagtgtcaa taaatcgacc attacttatt ttttaaatta cgatattatg 1200
aacggcacac cagctatagc aggtataaga ccggcatcca aaggcatgga aaaactgggt 1260
ctgatcatta acccaaggcc tgaagaaggc tttgtgcgtt acattccctg caaaataaac 1320
acatcgcccg atttgtttga cgccgctctg aaacccaacg ccacaacgct tattgatatt 1380
gtattgcaac gcgtggtgaa taccgaagta ttccgctttg aaggaacaga cggggtaacg 1440
ccgcctaaaa aagatttctc gaaagtgaag cccggaacgg atattatttg a 1491

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<210> 54

<211> 496

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 54

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Met Arg Gln Val Thr Leu Val Phe Val His Gly Tyr Ser Val Thr Asn
1          5          10          15
Ile Asp Thr Tyr Gly Glu Met Pro Leu Arg Leu Arg Asn Glu Gly Ala
          20          25          30
Thr Arg Asp Ile Glu Ile Lys Ile Glu Asn Ile Phe Leu Gly Arg Tyr
          35          40          45
Ile Ser Phe Asn Asp Asp Val Arg Leu Asn Asp Val Ser Arg Ala Leu
          50          55          60
Glu Thr Ala Val Gln Gln Ile Ala Pro Gly Asn Lys Asn Asn Ser
65          70          75          80
Arg Tyr Val Phe Ile Thr His Ser Thr Gly Gly Pro Val Val Arg Asn
          85          90          95
Trp Trp Asp Leu Tyr Tyr Lys Asn Ser Thr Lys Gln Cys Pro Met Ser
          100          105          110
His Leu Ile Met Leu Ala Pro Ala Asn Phe Gly Ser Ala Leu Ala Gln
          115          120          125
Leu Gly Lys Ser Lys Leu Ser Arg Ile Lys Ser Trp Phe Asp Gly Val
          130          135          140
Glu Pro Gly Gln Asn Val Leu Asn Trp Leu Glu Leu Gly Ser Ala Glu
145          150          155          160
Ala Trp Lys Leu Asn Thr Asp Trp Ile Lys Ser Asp Gly Ser Gln Ile
          165          170          175
Ser Ala Gln Gly Ile Phe Pro Phe Val Ile Ile Gly Gln Asp Ile Asp
          180          185          190
Arg Lys Leu Tyr Asp His Leu Asn Ser Tyr Thr Gly Glu Leu Gly Ser
          195          200          205
Asp Gly Val Val Arg Ser Ala Ala Ala Asn Leu Asn Ala Thr Tyr Val
          210          215          220
Lys Leu Thr Gln Pro Lys Pro Thr Leu Val Asn Gly Lys Leu Val Thr
225          230          235          240
Gly Asn Leu Glu Ile Gly Glu Val Lys Gln Ala Pro Tyr Thr Pro Met
          245          250          255

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Arg Ile Val Ser Lys Lys Ser His Ser Asn Lys Asp Met Gly Ile Met
 260 265 270
 Arg Ser Val Leu Lys Ser Thr Asn Asp Ala Asn Ser Ala Glu Thr Val
 275 280 285
 Asn Ala Ile Phe Asp Cys Ile Asn Val Lys Thr Leu Thr Asp Tyr Gln
 290 295 300
 Ser Ile Ala Thr Gln Phe Asp Ser Gln Thr Lys Asp Val Gln Glu Asn
 305 310 315 320
 Ser Ile Ile Glu Arg Glu Lys Thr Pro Phe Gly Thr Lys Asn Tyr Ile
 325 330 335
 His Asp Arg Phe Ser Gln Val Ile Phe Arg Val Thr Asp Ser Glu Gly
 340 345 350
 Tyr Pro Val Thr Ser Phe Asp Leu Ile Leu Thr Gly Gly Glu Lys Asn
 355 360 365
 Asp Pro Asn Ala Leu Pro Gln Gly Phe Phe Val Asp Arg Gln Cys Asn
 370 375 380
 Ser Val Asn Lys Ser Thr Ile Thr Tyr Phe Leu Asn Tyr Asp Ile Met
 385 390 395 400
 Asn Gly Thr Pro Ala Ile Ala Gly Ile Arg Pro Ala Ser Lys Gly Met
 405 410 415
 Glu Lys Leu Gly Leu Ile Ile Asn Pro Arg Pro Glu Glu Gly Phe Val
 420 425 430
 Arg Tyr Ile Pro Cys Lys Ile Asn Thr Ser Pro Asp Leu Phe Asp Ala
 435 440 445
 Ala Leu Lys Pro Asn Ala Thr Thr Leu Ile Asp Ile Val Leu Gln Arg
 450 455 460
 Val Val Ser Thr Glu Val Phe Arg Phe Glu Gly Thr Asp Gly Val Thr
 465 470 475 480
 Pro Pro Lys Lys Asp Phe Ser Lys Val Lys Pro Gly Thr Asp Ile Ile
 485 490 495

<210> 55

<211> 1041

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 55

atggcttcac	aattcagaaa	tctggttttt	gaaggaggcg	gtgtgaaggg	catcgcctat	60
atcggcgcca	tgcagggtgct	ggagcagcgg	ggactgctca	aggatattgt	ccgggtggga	120
ggtaccagtg	caggcgccat	caacgcgctg	atcttttcgc	tgggctttac	catcaaagag	180
cagcaggata	ttctcaactc	caccaacttc	agggagtta	tggacagctc	gttcgggttc	240
atccgaaact	tccggagggt	atggagcgaa	ttcggttgga	accgcggcga	tgtattttcg	300
gactgggccc	gggagctggg	gaaagagaag	ctcggcaaaa	agaacgccac	gttcggcgat	360
ctgaaaaagg	cgaaacgtcc	cgatctgtac	gtgatcggca	ccaatctctc	tacgggggtt	420
tccgagacct	tttcgcacga	acgccacgcc	gacatgcctc	tggtagatgc	ggtgcggata	480
agcatgtcga	tcccgtctct	ttttgctgca	cggaggctgg	gaaaacgtaa	ggatgtgtat	540
gtggatggcg	gggtgatgct	caactatccc	gtgaagctgt	tcgacaggga	gaagtatatc	600
gatttgagg	aagagaatga	ggcggcccgc	tatgtggagt	actacaatca	agagaatgcc	660
cggtttctgc	tcgagcggcc	cggccgaagc	ccttatgtgt	ataaccggca	gactctcggt	720
ctgcggctcg	acacgcagga	agagatcgcc	ctgttcggtt	acgatgagcc	gctgaagggc	780
aagcagatca	accgtttccc	cgaatacgcc	agagccctga	tcggctcgct	gatgcaggta	840
caggagaaca	tccacctgaa	aagtgcgcac	tggcagcgaa	cgctctacat	caacacgctg	900
gatgtgggca	ccaccgattt	cgacattacc	gacgagaaga	aaaaagtgt	ggtgaatgag	960
gggatcaagg	gagcggagac	ctatttccgc	tggtttgagg	atcccgaaga	aaaaccggtg	1020
aataaggtga	atcttgtctg	a				1041

<210> 56
 <211> 346
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 56
 Met Ala Ser Gln Phe Arg Asn Leu Val Phe Glu Gly Gly Gly Val Lys
 1 5 10 15
 Gly Ile Ala Tyr Ile Gly Ala Met Gln Val Leu Glu Gln Arg Gly Leu
 20 25 30
 Leu Lys Asp Ile Val Arg Val Gly Gly Thr Ser Ala Gly Ala Ile Asn
 35 40 45
 Ala Leu Ile Phe Ser Leu Gly Phe Thr Ile Lys Glu Gln Gln Asp Ile
 50 55 60
 Leu Asn Ser Thr Asn Phe Arg Glu Phe Met Asp Ser Ser Phe Gly Phe
 65 70 75 80
 Ile Arg Asn Phe Arg Arg Leu Trp Ser Glu Phe Gly Trp Asn Arg Gly
 85 90 95
 Asp Val Phe Ser Asp Trp Ala Gly Glu Leu Val Lys Glu Lys Leu Gly
 100 105 110
 Lys Lys Asn Ala Thr Phe Gly Asp Leu Lys Lys Ala Lys Arg Pro Asp
 115 120 125
 Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ser Glu Thr Phe
 130 135 140
 Ser His Glu Arg His Ala Asp Met Pro Leu Val Asp Ala Val Arg Ile
 145 150 155 160
 Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Arg Arg Leu Gly Lys Arg
 165 170 175
 Lys Asp Val Tyr Val Asp Gly Gly Val Met Leu Asn Tyr Pro Val Lys
 180 185 190
 Leu Phe Asp Arg Glu Lys Tyr Ile Asp Leu Glu Lys Glu Asn Glu Ala
 195 200 205
 Ala Arg Tyr Val Glu Tyr Tyr Asn Gln Glu Asn Ala Arg Phe Leu Leu
 210 215 220
 Glu Arg Pro Gly Arg Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
 225 230 235 240
 Leu Arg Leu Asp Thr Gln Glu Glu Ile Gly Leu Phe Arg Tyr Asp Glu
 245 250 255
 Pro Leu Lys Gly Lys Gln Ile Asn Arg Phe Pro Glu Tyr Ala Arg Ala
 260 265 270
 Leu Ile Gly Ser Leu Met Gln Val Gln Glu Asn Ile His Leu Lys Ser
 275 280 285
 Asp Asp Trp Gln Arg Thr Leu Tyr Ile Asn Thr Leu Asp Val Gly Thr
 290 295 300
 Thr Asp Phe Asp Ile Thr Asp Glu Lys Lys Lys Val Leu Val Asn Glu
 305 310 315 320
 Gly Ile Lys Gly Ala Glu Thr Tyr Phe Arg Trp Phe Glu Asp Pro Glu
 325 330 335
 Glu Lys Pro Val Asn Lys Val Asn Leu Val
 340 345

<210> 57
 <211> 1413
 <212> DNA
 <213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 57

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tttctcggca	agtacatcag	ctttcacgat	gaggtgactc	tggatgatat	agcacgtgcc	180
ttcgacaagg	cgctgagaga	catgtcgggt	gatggtgaca	cggctctcgcc	tttctcctgt	240
atcacgcatt	cgaccggcgg	ccctgtcgtt	cggcactgga	ttaacaaatt	ctacggcgcg	300
cgagggctat	cgaaactgcc	gctggagcat	ttggttatgc	tggcgcctgc	caaccacggc	360
tccagcctgg	cggtactcgg	caagcaacgt	cttggtcgca	tcaagtcctg	gttcgatggc	420
gtggagcccc	gacaaaaagt	gctcgactgg	ctatcgctgg	gcagcaatgg	gcaatgggcg	480
ctcaacaggg	atTTTTTgag	ctaccgcccc	gccaaacatg	gcttcttccc	ttttgttctg	540
acgggccagg	gtatagacac	aaaattctac	gattttttga	acagctacct	tgtggagccc	600
ggcagtgcag	gtgtggttcg	cgtggcgggt	gccaatatgc	atTTTtcgcta	cctctccctg	660
gtacaatctg	agaccgtatt	acacaccccc	ggcaagggtgc	tacagctgga	atataacgag	720
cggcgccccg	tgaagtcccc	acaagcggta	ccgatgggcg	tcttctccca	atttagccac	780
tctggcgaca	agatggggat	tatggcagtc	aagcgcaaga	aagacgcgca	tcaaatgatc	840
gtaacggaag	tgctgaagtg	tctctgcgta	tccgacagcg	atgaatatca	gcaaagaggc	900
cttgaacttg	cagaactgac	cgccagcgaa	cagcgcaagc	ccatcgaaga	ccaggacaag	960
attatcagcc	gctatagcat	gctgggtattt	agagtgcgcg	accaggcggg	caatacgatc	1020
ggagtgcacg	atttcgatat	cctcttactg	gccggagata	cctatagccc	cgacaaaactg	1080
ccagaggggt	tcttcattga	taaacaggcc	aatagagatg	ccggctcact	gatctactat	1140
gtggatgccg	acaaaatgtc	cgagatgaaa	gatggctgct	acggactgcg	ggtggtcgtg	1200
cggccggaga	aagggttttc	ctattacaca	acagggtgagt	tcaggtcaga	gggtatcccc	1260
gtggaccgtg	tatttgcagc	aaacgaaacc	acctatatgt	atatcaccat	gaaccgaagt	1320
gtcgatcaaa	atgtattccg	gttttcgcct	gcaacagagc	cacctgaaag	cttcaaaaaga	1380
accacgccct	caggtaccga	tatcccttca	tag			1413

<210> 58

<211> 470

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 58

Met	Gln	Leu	Val	Phe	Val	His	Gly	Trp	Ser	Val	Thr	His	Thr	Asn	Thr
1				5					10					15	
Tyr	Gly	Glu	Leu	Pro	Glu	Ser	Leu	Ala	Ala	Gly	Ala	Ala	Thr	His	Gly
			20					25					30		
Leu	Gln	Ile	Asp	Ile	Arg	His	Val	Phe	Leu	Gly	Lys	Tyr	Ile	Ser	Phe
		35					40					45			
His	Asp	Glu	Val	Thr	Leu	Asp	Asp	Ile	Ala	Arg	Ala	Phe	Asp	Lys	Ala
	50					55					60				
Leu	Arg	Asp	Met	Ser	Gly	Asp	Gly	Asp	Thr	Val	Ser	Pro	Phe	Ser	Cys
65					70				75					80	
Ile	Thr	His	Ser	Thr	Gly	Gly	Pro	Val	Val	Arg	His	Trp	Ile	Asn	Lys
			85					90						95	
Phe	Tyr	Gly	Ala	Arg	Gly	Leu	Ser	Lys	Leu	Pro	Leu	Glu	His	Leu	Val
		100						105					110		
Met	Leu	Ala	Pro	Ala	Asn	His	Gly	Ser	Ser	Leu	Ala	Val	Leu	Gly	Lys
	115						120					125			
Gln	Arg	Leu	Gly	Arg	Ile	Lys	Ser	Trp	Phe	Asp	Gly	Val	Glu	Pro	Gly
	130					135					140				
Gln	Lys	Val	Leu	Asp	Trp	Leu	Ser	Leu	Gly	Ser	Asn	Gly	Gln	Trp	Ala
145					150				155					160	
Leu	Asn	Arg	Asp	Phe	Leu	Ser	Tyr	Arg	Pro	Ala	Lys	His	Gly	Phe	Phe

Pro	Phe	Val	Leu	Thr	Gly	Gln	Gly	Ile	Asp	Thr	Lys	Phe	Tyr	Asp	Phe
			180					185					190		
Leu	Asn	Ser	Tyr	Leu	Val	Glu	Pro	Gly	Ser	Asp	Gly	Val	Val	Arg	Val
		195					200					205			
Ala	Gly	Ala	Asn	Met	His	Phe	Arg	Tyr	Leu	Ser	Leu	Val	Gln	Ser	Glu
	210					215					220				
Thr	Val	Leu	His	Thr	Pro	Gly	Lys	Val	Leu	Gln	Leu	Glu	Tyr	Asn	Glu
225					230					235					240
Arg	Arg	Pro	Val	Lys	Ser	Pro	Gln	Ala	Val	Pro	Met	Gly	Val	Phe	Ser
				245					250					255	
Gln	Phe	Ser	His	Ser	Gly	Asp	Lys	Met	Gly	Ile	Met	Ala	Val	Lys	Arg
			260					265					270		
Lys	Lys	Asp	Ala	His	Gln	Met	Ile	Val	Thr	Glu	Val	Leu	Lys	Cys	Leu
		275					280					285			
Cys	Val	Ser	Asp	Ser	Asp	Glu	Tyr	Gln	Gln	Arg	Gly	Leu	Glu	Leu	Ala
	290					295					300				
Glu	Leu	Thr	Ala	Ser	Glu	Gln	Arg	Lys	Pro	Ile	Glu	Asp	Gln	Asp	Lys
305					310					315					320
Ile	Ile	Ser	Arg	Tyr	Ser	Met	Leu	Val	Phe	Arg	Val	Arg	Asp	Gln	Ala
				325					330					335	
Gly	Asn	Thr	Ile	Gly	Val	His	Asp	Phe	Asp	Ile	Leu	Leu	Leu	Ala	Gly
			340					345						350	
Asp	Thr	Tyr	Ser	Pro	Asp	Lys	Leu	Pro	Glu	Gly	Phe	Phe	Met	Asp	Lys
		355					360						365		
Gln	Ala	Asn	Arg	Asp	Ala	Gly	Ser	Leu	Ile	Tyr	Tyr	Val	Asp	Ala	Asp
	370					375					380				
Lys	Met	Ser	Glu	Met	Lys	Asp	Gly	Cys	Tyr	Gly	Leu	Arg	Val	Val	Val
385					390					395					400
Arg	Pro	Glu	Lys	Gly	Phe	Ser	Tyr	Tyr	Thr	Thr	Gly	Glu	Phe	Arg	Ser
				405					410					415	
Glu	Gly	Ile	Pro	Val	Asp	Arg	Val	Phe	Ala	Ala	Asn	Glu	Thr	Thr	Tyr
			420					425					430		
Ile	Asp	Ile	Thr	Met	Asn	Arg	Ser	Val	Asp	Gln	Asn	Val	Phe	Arg	Phe
	435						440					445			
Ser	Pro	Ala	Thr	Glu	Pro	Pro	Glu	Ser	Phe	Lys	Arg	Thr	Thr	Pro	Ser
	450					455					460				
Gly	Thr	Asp	Ile	Pro	Ser										
465					470										

<210> 59

<211> 1038

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 59

atgacaacac	aatttagaaa	cttgatcttt	gaaggcggcg	gtgtaaaagg	cgttgcttac	60
attggcgcca	tgcagattct	tgaaaatcgt	ggcgtgttgc	aagatattcg	ccgagtcgga	120
gggtgcagtg	cgggtgcgat	taacgcgctg	attttttgcgc	tgggttacac	ggtccgtgag	180
caaaaagaga	tcttacaagc	caccgatttt	aaccagttta	tggataactc	ttgggggggtt	240
attcgtgata	ttcgcaggct	tgctcgagac	tttggctgga	ataagggtga	tttctttagt	300
agctggatag	gtgatttgat	tcatcgctcg	ttggggaatc	gccgagcgac	gttcaaagat	360
ctgcaaaagg	ccaagcttcc	tgatctttat	gtcatcggtg	ctaactctgt	tacagggttt	420
gcagaggtgt	tttctgccga	aagacacccc	gatatggagc	tggcgacagc	ggtgcgtatc	480
tccatgtcga	taccgtgtgt	ctttgcggca	gtgcgtcatg	gtgatcgaca	agatgtgtat	540
gtcgatgggg	gtgttcaact	taactatccg	attaaactgt	ttgatcggga	gcgttatatt	600

gatctggcca	aagatcccg	tgccgttcgg	cgaacgggtt	attacaacaa	agaaaacgct	660
cgctttcagc	ttgatcggcc	gggccatagc	ccctatgttt	acaatcgcca	gaccttgggt	720
ttgcgactgg	atagtcgcga	ggagataggg	ctctttcgtt	atgacgaacc	cctcaagggc	780
aaacccatta	agtccttcac	tgactacgct	cgacaacttt	tcggtgcgct	gatgaatgca	840
caggaaaaga	ttcatctaca	tggcgatgat	tggcaacgca	cggtctatat	cgatacactc	900
gatgtgggta	cgacggactt	caatctttct	gatgcaacca	agcaagcact	gattgagcaa	960
ggaattaacg	gcaccgaaaa	ttatttcgac	tggtttgata	atccggttaga	gaagcctgtg	1020
aatagagtgg	agtcatag					1038

<210> 60

<211> 345

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 60

Met	Thr	Thr	Gln	Phe	Arg	Asn	Leu	Ile	Phe	Glu	Gly	Gly	Gly	Val	Lys
1				5					10					15	
Gly	Val	Ala	Tyr	Ile	Gly	Ala	Met	Gln	Ile	Leu	Glu	Asn	Arg	Gly	Val
			20					25					30		
Leu	Gln	Asp	Ile	Arg	Arg	Val	Gly	Gly	Cys	Ser	Ala	Gly	Ala	Ile	Asn
		35					40					45			
Ala	Leu	Ile	Phe	Ala	Leu	Gly	Tyr	Thr	Val	Arg	Glu	Gln	Lys	Glu	Ile
	50					55					60				
Leu	Gln	Ala	Thr	Asp	Phe	Asn	Gln	Phe	Met	Asp	Asn	Ser	Trp	Gly	Val
65					70				75					80	
Ile	Arg	Asp	Ile	Arg	Arg	Leu	Ala	Arg	Asp	Phe	Gly	Trp	Asn	Lys	Gly
				85				90						95	
Asp	Phe	Phe	Ser	Ser	Trp	Ile	Gly	Asp	Leu	Ile	His	Arg	Arg	Leu	Gly
			100				105						110		
Asn	Arg	Arg	Ala	Thr	Phe	Lys	Asp	Leu	Gln	Lys	Ala	Lys	Leu	Pro	Asp
		115					120					125			
Leu	Tyr	Val	Ile	Gly	Thr	Asn	Leu	Ser	Thr	Gly	Phe	Ala	Glu	Val	Phe
	130					135					140				
Ser	Ala	Glu	Arg	His	Pro	Asp	Met	Glu	Leu	Ala	Thr	Ala	Val	Arg	Ile
145					150					155					160
Ser	Met	Ser	Ile	Pro	Leu	Phe	Phe	Ala	Ala	Val	Arg	His	Gly	Asp	Arg
				165				170						175	
Gln	Asp	Val	Tyr	Val	Asp	Gly	Gly	Val	Gln	Leu	Asn	Tyr	Pro	Ile	Lys
		180					185						190		
Leu	Phe	Asp	Arg	Glu	Arg	Tyr	Ile	Asp	Leu	Ala	Lys	Asp	Pro	Gly	Ala
		195				200						205			
Val	Arg	Arg	Thr	Gly	Tyr	Tyr	Asn	Lys	Glu	Asn	Ala	Arg	Phe	Gln	Leu
	210					215					220				
Asp	Arg	Pro	Gly	His	Ser	Pro	Tyr	Val	Tyr	Asn	Arg	Gln	Thr	Leu	Gly
225					230					235				240	
Leu	Arg	Leu	Asp	Ser	Arg	Glu	Glu	Ile	Gly	Leu	Phe	Arg	Tyr	Asp	Glu
			245						250					255	
Pro	Leu	Lys	Gly	Lys	Pro	Ile	Lys	Ser	Phe	Thr	Asp	Tyr	Ala	Arg	Gln
		260						265					270		
Leu	Phe	Gly	Ala	Leu	Met	Asn	Ala	Gln	Glu	Lys	Ile	His	Leu	His	Gly
	275					280						285			
Asp	Asp	Trp	Gln	Arg	Thr	Val	Tyr	Ile	Asp	Thr	Leu	Asp	Val	Gly	Thr
	290					295					300				
Thr	Asp	Phe	Asn	Leu	Ser	Asp	Ala	Thr	Lys	Gln	Ala	Leu	Ile	Glu	Gln
305				310						315				320	
Gly	Ile	Asn	Gly	Thr	Glu	Asn	Tyr	Phe	Asp	Trp	Phe	Asp	Asn	Pro	Leu

Thr Gln Pro Asp Thr Ile Met Gln Arg Cys Ala Glu Thr Leu Gly Leu
 100 105 110
 Thr His Asp Thr Ala Asp Ile Thr Tyr Ala Ala Ala Asp Thr Arg Phe
 115 120 125
 Ser Tyr Asn His Thr Ile Trp Ser Asn Asp Val Ala Asn Ala Pro Ser
 130 135 140
 Lys Ile Asn Lys Val Ile Ala Phe Gly Asp Ser Leu Ser Asp Thr Gly
 145 150 155 160
 Asn Ile Phe Asn Ala Ser Gln Trp Arg Phe Pro Asn Pro Asn Ser Trp
 165 170 175
 Phe Val Gly His Phe Ser Asn Gly Phe Val Trp Thr Glu Tyr Leu Ala
 180 185 190
 Gln Gly Leu Gly Leu Pro Leu Tyr Asn Trp Ala Val Gly Gly Ala Ala
 195 200 205
 Gly Arg Asn Gln Tyr Trp Ala Leu Thr Gly Val Asn Glu Gln Val Ser
 210 215 220
 Ser Tyr Leu Thr Tyr Met Glu Met Ala Pro Asn Tyr Arg Ala Glu Asn
 225 230 235 240
 Thr Leu Phe Thr Leu Glu Phe Gly Leu Asn Asp Phe Met Asn Tyr Asp
 245 250 255
 Arg Ser Leu Ala Asp Val Lys Ala Asp Tyr Ser Ser Ala Leu Ile Arg
 260 265 270
 Leu Val Glu Ala Gly Ala Lys Asn Met Val Leu Leu Thr Leu Pro Asp
 275 280 285
 Ala Thr Arg Ala Pro Gln Phe Gln Tyr Ser Thr Gln Glu His Ile Asp
 290 295 300
 Glu Val Arg Ala Lys Val Ile Gly Met Asn Ala Phe Ile Arg Glu Gln
 305 310 315 320
 Ala Arg Tyr Phe Gln Met Gln Gly Ile Asn Ile Ser Leu Phe Asp Ala
 325 330 335
 Tyr Thr Leu Phe Asp Gln Met Ile Ala Asp Pro Ala Ala His Gly Phe
 340 345 350
 Asp Asn Ala Ser Ala Pro Cys Leu Asp Ile Gln Arg Ser Ser Ala Ala
 355 360 365
 Asp Tyr Leu Tyr Thr His Ala Leu Ala Ala Glu Cys Ala Ser Ser Gly
 370 375 380
 Ser Asp Arg Phe Val Phe Trp Asp Val Thr His Pro Thr Thr Ala Thr
 385 390 395 400
 His Arg Tyr Ile Ala Asp His Ile Leu Ala Thr Gly Val Ala Gln Phe
 405 410 415
 Pro Arg

<210> 63

<211> 1242

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 63

atgaaaaata	cggttaatttt	ggctggctgt	atattggcag	ctccagccgt	cgcatgatgac	60
ctaacaatca	cccctgaaac	tataagtgtg	cgctacgcgt	ctgaggtgca	gaacaaacaa	120
acatacactt	atgttcgctg	ctgggtatcgt	ccagcgcaga	accatgacga	cccttccact	180
gagtggaat	gggctcgtga	cgacaatggc	gattacttca	ctatcgatgg	gtactggtgg	240
tcgtctgtct	ccttcaaaaa	catgttctat	accaataccc	cgcaaacaga	aattgaaaac	300
cgctgtaaag	aaacactagg	ggttaatcat	gatagtgccg	atcttcttta	ctatgcatca	360
gacaatcggt	tctcctacaa	ccatagtatt	tggaacaaacg	acaacgcagt	aaacaacaaa	420

<400> 66

Met Asn Pro Phe Leu Glu Asp Lys Ile Lys Ser Ser Gly Pro Lys Lys
1 5 10 15
Ile Leu Ala Cys Asp Gly Gly Gly Ile Leu Gly Leu Met Ser Val Glu
20 25 30
Ile Leu Ala Lys Ile Glu Ala Asp Leu Arg Thr Lys Leu Gly Lys Asp
35 40 45
Gln Asn Phe Val Leu Ala Asp Tyr Phe Asp Phe Val Cys Gly Thr Ser
50 55 60
Thr Gly Ala Ile Ile Ala Ala Cys Ile Ser Ser Gly Met Ser Met Ala
65 70 75 80
Lys Ile Arg Gln Phe Tyr Leu Asp Ser Gly Lys Gln Met Phe Asp Lys
85 90 95
Ala Ser Leu Leu Lys Arg Leu Gln Tyr Ser Tyr Asp Asp Glu Pro Leu
100 105 110
Ala Arg Gln Leu Arg Ala Ala Phe Asp Glu Gln Leu Lys Glu Thr Asp
115 120 125
Ala Lys Leu Gly Ser Ala His Leu Lys Thr Leu Leu Met Met Val Met
130 135 140
Arg Asn His Ser Thr Asp Ser Pro Trp Pro Val Ser Asn Asn Pro Tyr
145 150 155 160
Ala Lys Tyr Asn Asn Ile Ala Arg Lys Asp Cys Asn Leu Asn Leu Pro
165 170 175
Leu Trp Gln Leu Val Arg Ala Ser Thr Ala Ala Pro Thr Tyr Phe Pro
180 185 190
Pro Glu Val Ile Thr Phe Ala Asp Gly Thr Pro Glu Glu Tyr Asn Phe
195 200 205
Ile Phe Val Asp Gly Gly Val Thr Thr Tyr Asn Asn Pro Ala Tyr Leu
210 215 220
Ala Phe Leu Met Ala Thr Ala Lys Pro Tyr Ala Leu Asn Trp Pro Thr
225 230 235 240
Gly Ser Asn Gln Leu Leu Ile Val Ser Val Gly Thr Gly Ser Ala Ala
245 250 255
Asn Val Arg Pro Asn Leu Asp Val Asp Asp Met Asn Leu Ile His Phe
260 265 270
Ala Lys Asn Ile Pro Ser Ala Leu Met Asn Ala Ala Ser Ala Gly Trp
275 280 285
Asp Met Thr Cys Arg Val Leu Gly Glu Cys Arg His Gly Gly Met Leu
290 295 300
Asp Arg Glu Phe Gly Asp Met Val Met Pro Ala Ser Arg Asp Leu Asn
305 310 315 320
Phe Thr Gly Pro Lys Leu Phe Thr Tyr Met Arg Tyr Asp Pro Asp Val
325 330 335
Ser Phe Glu Gly Leu Lys Thr Ile Gly Ile Ser Asp Ile Asp Pro Ala
340 345 350
Lys Met Gln Gln Met Asp Ser Val Asn Asn Ile Pro Asp Ile Gln Arg
355 360 365
Val Gly Ile Glu Tyr Ala Lys Arg His Val Asp Thr Ala His Phe Glu
370 375 380
Gly Phe Lys
385

<210> 67

<211> 1419

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.


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<400> 67
atgggtcattg tcttcgtcca cggatggagc gtgcgcaaca ccaacacgta cgggcagctg      60
cccttgcgtc tcaagaagag cttcaaagcc gccgggaaac agattcaggt cgagaacatc      120
tacctgggcg agtacgtgag ctttgacgac caggtaacag tcgacgacat cgcccgcgca      180
ttcgattgcg cactgcggga aaaactatac gatccggcga cgaagcagtg gacgaagttc      240
gcctgcatca ctcatccac cggcgggccc gtgcgcgcgt tgtggatgga tctctactac      300
ggcgccgcca gactggccga gtgcccgatg tcccacctcg tgatgctcgc cccggccaat      360
catggctcgg cccttgccca gctcggcaag agccgcctca gccgcatcaa gagcttcttc      420
gaggggtgctg aaccgggcca gcgcgtcctc gactggctcg aactcggcag tgagctgagt      480
tgggccctca acacgagatg gctcgactac gactgcgcgc ccgccgcctg ctgggtcttc      540
acctcacctg gccagcgcat cgaccggagt ttgtacgacc atctcaacag ctataccggt      600
gagcagggat cggatggcgt cgtgcgcgtc gcccgggcca acatgaacac caagctgctg      660
acctttgaac agaaggggcg caagctcgtg ttcacaggcc agaagaagac cgccgacacc      720
ggccttggcg tcgtgccggg ccggtcgcac tccggcgcgc acatgggcat catcgccagc      780
gtgcgcggca ccggcgacca tcccaccctg gaatgggtga ctcgttgcct ggccgtcacc      840
gacgtcaaca cgtacgatgc cgtctgtaag gatctggacg ctctcaccgc ccagaccag      900
aaggatgaaa aggtggaaga ggtcaaaggc ctgctgcgga cggtcagata ccagacggac      960
cgctacgtca tgctcgtctt ccgctgaag aacgaccgcg gcgactacct ctccgattac     1020
gatctcctgc tcaccgcccg acccaactac tcgcccgacg acctgccga aggcttcttc     1080
gtcgaccgcc aacggaacca gcggaaccgc ggcaagctca cttactacct gaactacgac     1140
gccatggcca aattgaaagg taagaccgcc gagggccgctc tgggcttcaa gatcctggcg     1200
cgcccggtga aaggcgccct cgtctactat gaggttgcgg agttccagtc cgacgtgggc     1260
ggcgtcagca gcatgctgca gcccaacgca acagtgatga tcgacatcac cctcaatcgc     1320
aacgtcgacg cgcgcgtctt ccggttcacc gagaatctgc ccacgggtga ccagggcgag     1380
gaaatcagcg gcgtcccgcg ggggcagaac gtcccgtag      1419

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<210> 68

<211> 472

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 68

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Met Val Ile Val Phe Val His Gly Trp Ser Val Arg Asn Thr Asn Thr
 1           5           10          15
Tyr Gly Gln Leu Pro Leu Arg Leu Lys Lys Ser Phe Lys Ala Ala Gly
      20           25           30
Lys Gln Ile Gln Val Glu Asn Ile Tyr Leu Gly Glu Tyr Val Ser Phe
      35           40           45
Asp Asp Gln Val Thr Val Asp Ile Ala Arg Ala Phe Asp Cys Ala
      50           55           60
Leu Arg Glu Lys Leu Tyr Asp Pro Ala Thr Lys Gln Trp Thr Lys Phe
      65           70           75           80
Ala Cys Ile Thr His Ser Thr Gly Gly Pro Val Ala Arg Leu Trp Met
      85           90           95
Asp Leu Tyr Tyr Gly Ala Ala Arg Leu Ala Glu Cys Pro Met Ser His
      100          105          110
Leu Val Met Leu Ala Pro Ala Asn His Gly Ser Ala Leu Ala Gln Leu
      115          120          125
Gly Lys Ser Arg Leu Ser Arg Ile Lys Ser Phe Phe Glu Gly Val Glu
      130          135          140
Pro Gly Gln Arg Val Leu Asp Trp Leu Glu Leu Gly Ser Glu Leu Ser
      145          150          155          160
Trp Ala Leu Asn Thr Arg Trp Leu Asp Tyr Asp Cys Arg Ala Ala Ala
      165          170          175
Cys Trp Val Phe Thr Leu Thr Gly Gln Arg Ile Asp Arg Ser Leu Tyr

```



```

ttgcgactag atagtcgaga ggagataggg ctctttcggtt atgacgaacc cctcaagggc 780
aaaccattta agtccttcac tgactacgct cgacaacttt tcggtgcggt gatgaatgca 840
caggaaaaga ttcattctaca tggcgatgat tggcagcgca cggctctatat cgatacattg 900
gatgtgggta cgacggactt caatctttct gatgcaacta agcaagcact gattgaacag 960
ggaattaacg gcaccgaaaa ttatttcgag tggtttgata atccggttga gaagcctgtt 1020
aatagagtgg agtcatag 1038

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<210> 70

<211> 345

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 70

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Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
 1          5          10          15
Gly Val Ala Tyr Ile Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
 20          25          30
Leu Gln Asp Ile Arg Arg Val Gly Gly Cys Ser Ala Gly Ala Ile Asn
 35          40          45
Ala Leu Ile Phe Ala Leu Gly Tyr Thr Val Arg Glu Gln Lys Glu Ile
 50          55          60
Leu Gln Ala Thr Asp Phe Asn Gln Phe Met Asp Asn Ser Trp Gly Val
 65          70          75          80
Ile Arg Asp Ile Arg Arg Leu Ala Arg Asp Phe Gly Trp His Lys Gly
 85          90          95
Asp Phe Phe Asn Ser Trp Ile Gly Asp Leu Ile His Arg Arg Leu Gly
100          105          110
Asn Arg Arg Ala Thr Phe Lys Asp Leu Gln Lys Ala Lys Leu Pro Asp
115          120          125
Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Tyr Ala Glu Val Phe
130          135          140
Ser Ala Glu Arg His Pro Asp Met Glu Leu Ala Thr Ala Val Arg Ile
145          150          155          160
Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Val Arg His Gly Asp Arg
165          170          175
Gln Asp Val Tyr Val Asp Gly Gly Val Gln Leu Asn Tyr Pro Ile Lys
180          185          190
Leu Phe Asp Arg Glu Arg Tyr Ile Asp Leu Ala Lys Asp Pro Gly Ala
195          200          205
Val Arg Arg Thr Gly Tyr Tyr Asn Lys Glu Asn Ala Arg Phe Gln Leu
210          215          220
Glu Arg Pro Gly Tyr Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
225          230          235          240
Leu Arg Leu Asp Ser Arg Glu Glu Ile Gly Leu Phe Arg Tyr Asp Glu
245          250          255
Pro Leu Lys Gly Lys Pro Ile Lys Ser Phe Thr Asp Tyr Ala Arg Gln
260          265          270
Leu Phe Gly Ala Leu Met Asn Ala Gln Glu Lys Ile His Leu His Gly
275          280          285
Asp Asp Trp Gln Arg Thr Val Tyr Ile Asp Thr Leu Asp Val Gly Thr
290          295          300
Thr Asp Phe Asn Leu Ser Asp Ala Thr Lys Gln Ala Leu Ile Glu Gln
305          310          315          320
Gly Ile Asn Gly Thr Glu Asn Tyr Phe Glu Trp Phe Asp Asn Pro Leu
325          330          335
Glu Lys Pro Val Asn Arg Val Glu Ser

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<210> 71
 <211> 3264
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 71
 atgtcgctat catcaccgcc cgaaaccccc gaaccccccg aacccccgtc acccggcgcg 60
 cgatcgctcc ggggaggatg gagccgccgg gtggccggcc tgcctggccct ggtgctgctc 120
 accgggctcc tccagatcgt cgtgccgctc gcacggcccg ccgcgccggc cgtacagcag 180
 cccgcgatga cgtggaacct gcatggggcc aagaagaccg cggaactggg tcccgatctg 240
 atgctgaacc ataacgtcac cgtcgcggcc ctccaggaag tggccaacgg caacttctctg 300
 ggccctactc ccacagagca cgacgtgccc tacctcaagc cggacggcac gacctcgact 360
 ccgcccgatc cgcagaaatg gcgggtcgag aagtacaacc tcgccaagga cgtatgcaacc 420
 gcttttcgtga tccggaccgg ctccaacaac cgcgggctcg cgatcgtcac caccaggac 480
 gtcggcgatg tctcgcagaa tgtacacgtc gtcaatgtga ccgaggattg ggaaggcaag 540
 atgttccccg ccctgggggt gaagatcgac ggcgcctggg actactccat ccacgcctcc 600
 accacgccga agcgcgcgaa caacaacgcc ggcactctgg tcgaggacct ctccaagctg 660
 cacgagacgg ccgctttcga aggcgactgg gccgcgatgg gcgactggaa ccggtacccc 720
 tccgaggact cgaacgccta cgagaaccaa cggaagcatc tcaaaggcgc catgctggaca 780
 aactttccgg ataatcaggc ggcgttgccg gaagtcctgg agttcgagtc cgacgaacgc 840
 gtcactctggc aggggtgcgag gacccacgac caccggcccg agctcgacta catggtggcc 900
 aagggagccg gtaacgacta caaggccagc cgatcgacgt cgaagcacgg ctccgatcac 960
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 ccggccgtca tcgtctcgat gggggacagc tatatctccg gcgagggagg gcgctggcag 1140
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 acggaggtct acgagaagaa ctccgaaggc agcgatgcct gtcaccgctc cgacgtcgcg 1260
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 tcggggcgcc agaccaagca cctgctcacc gagaccttca agggtgaaaa gcccagatc 1380
 gagcagctcg ccgacgtcgc cgaaacccac cgggtggaca cgatcggtgt ctccatcggc 1440
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 gaaggcgctg gtcacacgga cgtcgacgat acccttgata gccggttggg cgatgtgagc 1560
 agatccgtct ccgaggttct ggccgccatc cgcgacacca tgatcgaggc cgggcaggac 1620
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 ctgtgctcga agcacaccgc acaggcggag tccggcgaat cgctggcgaa tccaatactg 1920
 gaacacgagg ccgagtgggt gcgcttcgta ccaggctcga ccacgcccgg tgacacggcc 1980
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 aatccccgcc tcgtgtggcc acgcagttcg cccatcgacg ccgtcgtgga gaccgcggac 2160
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 ggccaaaccg acggatggct cgggtgaggt aaggacactt cgaactggcc gagcctgagt 2340
 ggaaccgact tcgtcgacgg catcgacgcc gccgcccagg caccgaccag caccggtcac 2400
 cagctgtcgc tgttccacag cggcgttgag gacaaccagt acgtgcgggt cgagatggcg 2460
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 cgggcgatgg tcttcaggca cggctatgtg gggctgtgtc aggtctccct cgacgtctc 2640
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 tgggtcgacc tgatcagcgg tacgcaggtg gtgacgtgct tgggtgactt ggacgatctg 2820
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ggcagcatct tgcactggac cggcggagag gcgtggaagc cggagaagat gcagatcaag 2940
accggcgcg gcgatcccta cgacatggac gccgacgacc ggaggccaa gcctgcggtg 3000
tcgggctcgc acgagcagtg ccgtccggag ggactagcgc agacccccgg cgtgaacacg 3060
ccgtactgcg aggtgtacga caccgacggc cgcgaatggc tgggcgggaa cgggcacgac 3120
aggcgggtca tcggctactt caccggctgg cgcaccggtg agaacgacca gccgcgctac 3180
ctggtgccga acatcccggtg gtcgaagggtg acccatcatca actacgcgtt cgcgaaagtc 3240
gacgacgaca acaagatcca aaga 3264

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<210> 72

<211> 1088

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 72

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Met Ser Leu Ser Ser Pro Pro Glu Thr Pro Glu Pro Pro Glu Pro Pro
1 5 10 15
Ser Pro Gly Ala Arg Ser Leu Arg Gly Gly Trp Ser Arg Arg Val Ala
20 25 30
Gly Leu Leu Ala Leu Val Leu Leu Thr Gly Leu Leu Gln Ile Val Val
35 40 45
Pro Leu Ala Arg Pro Ala Ala Ala Ala Val Gln Gln Pro Ala Met Thr
50 55 60
Trp Asn Leu His Gly Ala Lys Lys Thr Ala Glu Leu Val Pro Asp Leu
65 70 75 80
Met Arg Asn His Asn Val Thr Val Ala Ala Leu Gln Glu Val Ala Asn
85 90 95
Gly Asn Phe Leu Gly Leu Thr Pro Thr Glu His Asp Val Pro Tyr Leu
100 105 110
Lys Pro Asp Gly Thr Thr Ser Thr Pro Pro Asp Pro Gln Lys Trp Arg
115 120 125
Val Glu Lys Tyr Asn Leu Ala Lys Asp Asp Ala Thr Ala Phe Val Ile
130 135 140
Arg Thr Gly Ser Asn Asn Arg Gly Leu Ala Ile Val Thr Thr Gln Asp
145 150 155 160
Val Gly Asp Val Ser Gln Asn Val His Val Val Asn Val Thr Glu Asp
165 170 175
Trp Glu Gly Lys Met Phe Pro Ala Leu Gly Val Lys Ile Asp Gly Ala
180 185 190
Trp Tyr Tyr Ser Ile His Ala Ser Thr Thr Pro Lys Arg Ala Asn Asn
195 200 205
Asn Ala Gly Thr Leu Val Glu Asp Leu Ser Lys Leu His Glu Thr Ala
210 215 220
Ala Phe Glu Gly Asp Trp Ala Ala Met Gly Asp Trp Asn Arg Tyr Pro
225 230 235 240
Ser Glu Asp Ser Asn Ala Tyr Glu Asn Gln Arg Lys His Leu Lys Gly
245 250 255
Ala Met Arg Thr Asn Phe Pro Asp Asn Gln Ala Ala Leu Arg Glu Val
260 265 270
Leu Glu Phe Glu Ser Asp Glu Arg Val Ile Trp Gln Gly Ala Arg Thr
275 280 285
His Asp His Gly Ala Glu Leu Asp Tyr Met Val Ala Lys Gly Ala Gly
290 295 300
Asn Asp Tyr Lys Ala Ser Arg Ser Thr Ser Lys His Gly Ser Asp His
305 310 315 320
Tyr Pro Val Phe Phe Gly Ile Gly Asp Asp Ser Asp Thr Cys Met Gly
325 330 335

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Gly	Thr	Ala	Pro	Val	Ala	Ala	Asn	Ala	Pro	Arg	Ala	Ala	Ala	Thr	Glu	340	345	350
Ser	Cys	Pro	Leu	Asp	Asp	Asp	Leu	Pro	Ala	Val	Ile	Val	Ser	Met	Gly	355	360	365
Asp	Ser	Tyr	Ile	Ser	Gly	Glu	Gly	Gly	Arg	Trp	Gln	Gly	Asn	Ala	Asn	370	375	380
Thr	Ser	Ser	Gly	Gly	Asp	Ser	Trp	Gly	Thr	Asp	Arg	Ala	Ala	Asp	Gly	385	390	400
Thr	Glu	Val	Tyr	Glu	Lys	Asn	Ser	Glu	Gly	Ser	Asp	Ala	Cys	His	Arg	405	410	415
Ser	Asp	Val	Ala	Glu	Ile	Lys	Arg	Ala	Asp	Ile	Ala	Asp	Ile	Pro	Ala	420	425	430
Glu	Arg	Arg	Ile	Asn	Ile	Ala	Cys	Ser	Gly	Ala	Glu	Thr	Lys	His	Leu	435	440	445
Leu	Thr	Glu	Thr	Phe	Lys	Gly	Glu	Lys	Pro	Gln	Ile	Glu	Gln	Leu	Ala	450	455	460
Asp	Val	Ala	Glu	Thr	His	Arg	Val	Asp	Thr	Ile	Val	Val	Ser	Ile	Gly	465	470	475
Gly	Asn	Asp	Leu	Glu	Phe	Ala	Asp	Ile	Val	Ser	Gln	Cys	Ala	Thr	Ala	485	490	495
Phe	Met	Leu	Gly	Glu	Gly	Ala	Cys	His	Thr	Asp	Val	Asp	Asp	Thr	Leu	500	505	510
Asp	Ser	Arg	Leu	Gly	Asp	Val	Ser	Arg	Ser	Val	Ser	Glu	Val	Leu	Ala	515	520	525
Ala	Ile	Arg	Asp	Thr	Met	Ile	Glu	Ala	Gly	Gln	Asp	Asp	Thr	Ser	Tyr	530	535	540
Lys	Leu	Val	Leu	Gln	Ser	Tyr	Pro	Ala	Pro	Leu	Pro	Ala	Ser	Asp	Glu	545	550	555
Met	Arg	Tyr	Thr	Gly	Asp	His	Tyr	Asp	Arg	Tyr	Thr	Glu	Gly	Gly	Cys	565	570	575
Pro	Phe	Tyr	Asp	Val	Asp	Leu	Asp	Trp	Thr	Arg	Asp	Val	Leu	Ile	Lys	580	585	590
Lys	Ile	Glu	Ala	Thr	Leu	Arg	Gly	Val	Ala	Lys	Ser	Ala	Asp	Ala	Ala	595	600	605
Phe	Leu	Asn	Leu	Thr	Asp	Thr	Phe	Thr	Gly	His	Glu	Leu	Cys	Ser	Lys	610	615	620
His	Thr	Arg	Gln	Ala	Glu	Ser	Gly	Glu	Ser	Leu	Ala	Asn	Pro	Ile	Leu	625	630	635
Glu	His	Glu	Ala	Glu	Trp	Val	Arg	Phe	Val	Pro	Gly	Leu	Thr	Thr	Pro	645	650	655
Gly	Asp	Thr	Ala	Glu	Ala	Ile	His	Pro	Asn	Ala	Phe	Gly	Gln	His	Ala	660	665	670
Leu	Ser	Ser	Cys	Leu	Ser	Gln	Ala	Val	Arg	Thr	Met	Asp	Asp	Ser	Asp	675	680	685
Gln	Arg	Tyr	Phe	Glu	Cys	Asp	Gly	Arg	Asp	Thr	Gly	Asn	Pro	Arg	Leu	690	695	700
Val	Trp	Pro	Arg	Ser	Ser	Pro	Ile	Asp	Ala	Val	Val	Glu	Thr	Ala	Asp	705	710	715
Gly	Trp	Gln	Gly	Asp	Asp	Phe	Arg	Leu	Ala	Asp	His	Tyr	Met	Phe	Gln	725	730	735
Arg	Gly	Val	Tyr	Ala	Arg	Phe	Asn	Pro	Asp	Ala	Asp	Arg	Ser	Gly	Ala	740	745	750
Ile	Asp	Pro	Gly	Arg	Ile	Thr	Phe	Gly	Gln	Thr	Asp	Gly	Trp	Leu	Gly	755	760	765
Glu	Val	Lys	Asp	Thr	Ser	Asn	Trp	Pro	Ser	Leu	Ser	Gly	Thr	Asp	Phe	770	775	780
Val	Asp	Gly	Ile	Asp	Ala	Ala	Ala	Glu	Ala	Arg	Thr	Ser	Thr	Gly	His	785	790	795
Gln	Leu	Leu	Leu	Phe	His	Ser	Gly	Val	Glu	Asp	Asn	Gln	Tyr	Val	Arg			

<210> 74
 <211> 250
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 74
 Met Gly Asn Gly Ala Ala Val Gly Ser Asn Asp Asn Gly Arg Glu Glu
 1 5 10 15
 Ser Val Tyr Val Leu Ser Val Ile Ala Cys Asn Val Tyr Tyr Leu Gln
 20 25 30
 Lys Cys Glu Gly Gly Ala Ser Arg Asp Ser Val Ile Arg Glu Ile Asn
 35 40 45
 Ser Gln Thr Gln Pro Leu Gly Tyr Glu Ile Val Ala Asp Ser Ile Arg
 50 55 60
 Asp Gly His Ile Gly Ser Phe Ala Cys Lys Met Ala Val Phe Arg Asn
 65 70 75 80
 Asn Gly Asn Gly Asn Cys Val Leu Ala Ile Lys Gly Thr Asp Met Asn
 85 90 95
 Asn Ile Asn Asp Leu Val Asn Asp Leu Thr Met Ile Leu Gly Gly Ile
 100 105 110
 Gly Ser Val Ala Ala Ile Gln Pro Thr Ile Asn Met Ala Gln Glu Leu
 115 120 125
 Ile Asp Gln Tyr Gly Val Asn Leu Ile Thr Gly His Ser Leu Gly Gly
 130 135 140
 Tyr Met Thr Glu Ile Ile Ala Thr Asn Arg Gly Leu Pro Gly Ile Ala
 145 150 155 160
 Phe Cys Ala Pro Gly Ser Asn Gly Pro Ile Val Lys Leu Gly Gly Gln
 165 170 175
 Glu Thr Pro Gly Phe His Asn Val Asn Phe Glu His Asp Pro Ala Gly
 180 185 190
 Asn Val Met Thr Gly Val Tyr Thr His Val Gln Trp Ser Ile Tyr Val
 195 200 205
 Gly Cys Asp Gly Met Thr His Gly Ile Glu Asn Met Val Asn Tyr Phe
 210 215 220
 Lys Asp Lys Arg Asp Leu Thr Asn Arg Asn Ile Gln Gly Arg Ser Glu
 225 230 235 240
 Ser His Asn Thr Gly Tyr Tyr Tyr Pro Lys
 245 250

<210> 75
 <211> 1335
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 75
 atgactacta aaatcttttt aattcacgga tggctctgtca agacaacaca aacatatcag 60
 gcgctgcacc ttaagttggc agagcagggg tatcagctgg aagatatatta cctcgggagg 120
 tatctgtccc ttgaaaatca tatcgaaata cgggatattg caaaagcaat gcaccgtgca 180
 ttgctggaga ggattaccga ctggagtcag cctttccatt ttattactca cagtacggga 240
 ggtatggctg ccaaattatt gatattgaat cattataaag gaagtattgc aaaacaaaaa 300
 ccactcaaaa atgtagtgtt tctggctgca cctaattttg gttcaaggct ggcacaccat 360
 ggacgtacca tgctgggaga aataatggaa ctgggagaaa cagggaagaa gattcttgaa 420
 tctctggagt taggaagtgc tttttcgtgg gatgtgaatg agcagttttt taatgcgtcc 480


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aattggaaag ataaagaaat aaagttctat aacctgatag gagacagggt caaaacggat      540
tttttttaaat ccaaaaatttt tccagctgcg tttgaaagcg ggtcagatat ggtgattcgg      600
gttgcggcag gaaatcagaa ctttgtccgg tacaggtagc atagtcagaa agatagcttt      660
actgttgtca atgagttgaa aggaattgct tttggtgctc tctaccaata tacacattcc      720
aatgatgatt atggaatcct gaacagcatc aaaaaaagtt caacccttga aaaccatcag      780
gcactcagac taattgtaga atgtctgaag gtttcgggag ataaagaata tgaaaatgtt      840
gttgcacagt tggctgcagc gacaaaagaa accagagaaa aacgccaggg atatgcacag      900
ctggatttcc gttttcggga tgatgaaggc tttccaatag atgattatgt ttagagagctg      960
ggagtaatgg taaatggaaa acctaaacca tctaaaacag tagatgacgt gcataagaat     1020
aaaattacac caaacatct tactgtattc attaacctga aagaactgga acctaactcg     1080
aagtacttta tcaatattaa atcgatatcg gaatcctcca tgtatagtta cgatcctgct     1140
gtcaggacta tagagcttgc ttctaacgag attacaaaaa ttatccgtga ggaccataca     1200
acacagattg atgtgatact ttcccggact cctgctaaaa accttttcat gtttcatcgc     1260
ggagatgatg aagacctaca tgtgacatgg tcgcggtacg gagaaacaaa aagtacaaaag     1320
caggaataaa aataa                                     1335

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<210> 76

<211> 444

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 76

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Met Thr Thr Lys Ile Phe Leu Ile His Gly Trp Ser Val Lys Thr Thr
1          5          10          15
Gln Thr Tyr Gln Ala Leu His Leu Lys Leu Ala Glu Gln Gly Tyr Gln
20          25          30
Leu Glu Asp Ile Tyr Leu Gly Arg Tyr Leu Ser Leu Glu Asn His Ile
35          40          45
Glu Ile Arg Asp Ile Ala Lys Ala Met His Arg Ala Leu Leu Glu Arg
50          55          60
Ile Thr Asp Trp Ser Gln Pro Phe His Phe Ile Thr His Ser Thr Gly
65          70          75          80
Gly Met Val Ala Lys Tyr Trp Ile Leu Asn His Tyr Lys Gly Ser Ile
85          90          95
Ala Lys Gln Lys Pro Leu Lys Asn Val Val Phe Leu Ala Ala Pro Asn
100         105         110
Phe Gly Ser Arg Leu Ala His His Gly Arg Thr Met Leu Gly Glu Ile
115         120         125
Met Glu Leu Gly Glu Thr Gly Lys Lys Ile Leu Glu Ser Leu Glu Leu
130         135         140
Gly Ser Ala Phe Ser Trp Asp Val Asn Glu Gln Phe Phe Asn Ala Ser
145         150         155         160
Asn Trp Lys Asp Lys Glu Ile Lys Phe Tyr Asn Leu Ile Gly Asp Arg
165         170         175
Val Lys Thr Asp Phe Phe Lys Ser Lys Ile Phe Pro Ala Ala Phe Glu
180         185         190
Ser Gly Ser Asp Met Val Ile Arg Val Ala Ala Gly Asn Gln Asn Phe
195         200         205
Val Arg Tyr Arg Tyr Asp Ser Gln Lys Asp Ser Phe Thr Val Val Asn
210         215         220
Glu Leu Lys Gly Ile Ala Phe Gly Ala Leu Tyr Gln Tyr Thr His Ser
225         230         235         240
Asn Asp Asp Tyr Gly Ile Leu Asn Ser Ile Lys Lys Ser Ser Thr Leu
245         250         255
Glu Asn His Gln Ala Leu Arg Leu Ile Val Glu Cys Leu Lys Val Ser
260         265         270

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Gly Asp Lys Glu Tyr Glu Asn Val Val Ala Gln Leu Ala Ala Ala Thr
 275 280 285
 Lys Glu Thr Arg Glu Lys Arg Gln Gly Tyr Ala Gln Leu Asp Phe Arg
 290 295 300
 Phe Arg Asp Asp Glu Gly Phe Pro Ile Asp Asp Tyr Val Val Glu Leu
 305 310 315 320
 Gly Val Met Val Asn Gly Lys Pro Lys Pro Ser Lys Thr Val Asp Asp
 325 330 335
 Val His Lys Asn Lys Ile Thr Pro Asn His Leu Thr Val Phe Ile Asn
 340 345 350
 Leu Lys Glu Leu Glu Pro Asn Leu Lys Tyr Phe Ile Asn Ile Lys Ser
 355 360 365
 Ile Ser Glu Ser Ser Met Tyr Ser Tyr Asp Pro Ala Val Arg Thr Ile
 370 375 380
 Glu Leu Ala Ser Asn Glu Ile Thr Lys Ile Ile Arg Glu Asp His Thr
 385 390 395 400
 Thr Gln Ile Asp Val Ile Leu Ser Arg Thr Pro Ala Lys Asn Leu Phe
 405 410 415
 Met Phe His Arg Gly Asp Asp Glu Asp Leu His Val Thr Trp Ser Arg
 420 425 430
 Tyr Gly Glu Thr Lys Ser Thr Lys Gln Gly Ile Lys
 435 440

<210> 77
 <211> 1026
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 77
 atggccttatc actttaaaaa cttggtcttc gaaggcgggtg gcgtgaaagg catcgcctac 60
 gtgggtgctc ttgaagtact tgagagagaa ggcattctga aagacatcaa acgcgtgggt 120
 ggtacttcgg ctggagcgct gggtgccgtc ttaatcagtt tgggctatac cgcccaagaa 180
 ttgaaggaca tcctatggaa aatcaatttc caaaactttt tggacagctc gtggggcttg 240
 gtgcgcaaca cggcacgttt cattgaggat tacggttggt acaaagggtga gtttttccgc 300
 gaattggttg ccggctacat caaggaaaaa acgggcaata gtgaaagcac tttcaaggat 360
 ctggccaaat caaaagattt ccgtggcctc agccttattg gtagcgatct gtccacagga 420
 tactcaaagg tgttcagcaa cgaattcacc ccaaacgtca aagtagctga tgcagcccgc 480
 atctccatgt cgatacccct gtttttcaaa gccgttcgcg gtgtaaacgg tgatggacac 540
 atttacgtcg atggtggact gttagacaac tatgccatca aggtgttcga ccgcgtcaat 600
 tacgtaaaga ataagaacaa cgtacggtac accgagtatt atgaaaagac caacaagtcg 660
 ctgaaaagca aaaacaagct gaccaacgaa tacgtctaca ataaagaaac tttgggcttc 720
 cgattggatg ccaaagaaca gattgagatg tttctcgacc atagtataga accaaaggca 780
 aaggacattg actcactatt ctcttacacg aaggcttttg tcaccaccct catcgacttt 840
 caaaacaatg tacatttgca tagtgacgac tggcaacgca cagtctatat cgactcttta 900
 ggtatcagtt ccaactgactt cggcatctct gactctaaaa aacagaaact cgtcgattca 960
 ggcatttttg atacgcaaaa atacctggat tggataaaca acgacgaaga gaaagccaac 1020
 aaatag 1026

<210> 78
 <211> 341
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 78

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Met Ala Tyr His Phe Lys Asn Leu Val Phe Glu Gly Gly Gly Val Lys
 1          5          10          15
Gly Ile Ala Tyr Val Gly Ala Leu Glu Val Leu Glu Arg Glu Gly Ile
 20          25          30
Leu Lys Asp Ile Lys Arg Val Ala Gly Thr Ser Ala Gly Ala Leu Val
 35          40          45
Ala Val Leu Ile Ser Leu Gly Tyr Thr Ala Gln Glu Leu Lys Asp Ile
 50          55          60
Leu Trp Lys Ile Asn Phe Gln Asn Phe Leu Asp Ser Ser Trp Gly Leu
 65          70          75          80
Val Arg Asn Thr Ala Arg Phe Ile Glu Asp Tyr Gly Trp Tyr Lys Gly
 85          90          95
Glu Phe Phe Arg Glu Leu Val Ala Gly Tyr Ile Lys Glu Lys Thr Gly
 100         105         110
Asn Ser Glu Ser Thr Phe Lys Asp Leu Ala Lys Ser Lys Asp Phe Arg
 115         120         125
Gly Leu Ser Leu Ile Gly Ser Asp Leu Ser Thr Gly Tyr Ser Lys Val
 130         135         140
Phe Ser Asn Glu Phe Thr Pro Asn Val Lys Val Ala Asp Ala Ala Arg
 145         150         155         160
Ile Ser Met Ser Ile Pro Leu Phe Phe Lys Ala Val Arg Gly Val Asn
 165         170         175
Gly Asp Gly His Ile Tyr Val Asp Gly Gly Leu Leu Asp Asn Tyr Ala
 180         185         190
Ile Lys Val Phe Asp Arg Val Asn Tyr Val Lys Asn Lys Asn Asn Val
 195         200         205
Arg Tyr Thr Glu Tyr Tyr Glu Lys Thr Asn Lys Ser Leu Lys Ser Lys
 210         215         220
Asn Lys Leu Thr Asn Glu Tyr Val Tyr Asn Lys Glu Thr Leu Gly Phe
 225         230         235         240
Arg Leu Asp Ala Lys Glu Gln Ile Glu Met Phe Leu Asp His Ser Ile
 245         250         255
Glu Pro Lys Ala Lys Asp Ile Asp Ser Leu Phe Ser Tyr Thr Lys Ala
 260         265         270
Leu Val Thr Thr Leu Ile Asp Phe Gln Asn Asn Val His Leu His Ser
 275         280         285
Asp Asp Trp Gln Arg Thr Val Tyr Ile Asp Ser Leu Gly Ile Ser Ser
 290         295         300
Thr Asp Phe Gly Ile Ser Asp Ser Lys Lys Gln Lys Leu Val Asp Ser
 305         310         315         320
Gly Ile Leu His Thr Gln Lys Tyr Leu Asp Trp Tyr Asn Asn Asp Glu
 325         330         335
Glu Lys Ala Asn Lys
 340

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<210> 79

<211> 1701

<212> DNA

<213> Unknown

<220>'

<223> Obtained from an environmental sample.

<400> 79

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atgagaaatt tcagcaaggg attgaccagt attttgctta gcatagcgac atccaccagt      60
gcatggcct ttaccagat cggggccggc ggagcgattc cgatgggcca tgagtggcta      120
acccgcgct cggcgctgga actgctgaat gccgacaatc tggtcggcaa tgacccggcc      180
gaccacgct tgggctggag cgaaggtctc gccacaatc tcgatctctc gaatgccag      240

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aacgaagtgc agcgcacatcaa gagcattacc aagagccacg ccctgtatga gccgcgttac 300
gatgacgttt tcgcccgcacat cgtcggcgag cgctgggttg ataccgccgg tttcaacgtg 360
gccaaaggcca ccgtcggcaa gatcgattgc ttcagcgccg tcgcgcaaga gcccgccgat 420
gtgcaacaag accattttcat gcgcggttat gacgacgtgg gtggacaagg gggcgtgaac 480
gctgcccgcc gcgcgcagca gcgctttatc aatcacttcg tcaacgcagc catggccgaa 540
gagaagagca tcaaggcatg ggatggcggc ggttattctt cgctggaaaa agtcagccac 600
aactacttct tgtttggccg cgccggttcac ttgttccagg attctttcag ccccgaaacac 660
accgtgcgcc tgccctgaaga caattacgtc aaagtccgtc aggtcaaggc gtatctctgc 720
tctgaagggtg ccgaacagca tacgcacaac acgcaagatg ccatcaactt caccagcggc 780
gatgtcatct ggaaacagaa caccggtctg gatgcaggct ggagcaccta caaggccagc 840
aacatgaagc cgggtggcatt gggttgccctg gaagccagca aagatttgtg ggccgccttt 900
attcgcacca tggccgtttc ccgcgaggag cgtcgcgccc tcgccgaaca ggaagcgcag 960
gctctcgtea atcactggtt gtcgttcgac gaacaggaaa tgctgaactg gtacgaagaa 1020
gaagagcacc gcgatcatac gtacgtcaag gaaccgcggc agagcggccc aggttcgctc 1080
ttattcgatt gcatgggttg tctgggtgtg gcctcgggca gtcaggcgca acgggtggcg 1140
gaactcgatc agcaacgccg ccaatgtttg ttcaacgtca aggcgcgtac tggctatggc 1200
gatctgaatg atccacacat ggatattccg tacaactggc aatgggtgtc gtcgacgcaa 1260
tggaatatcc ctgcggccga ctggaaaatc ccgcagctgc ccgccgattc agggaaatca 1320
gtcgtcatca agaattcgat caatggcgat ccgctgggtg cacctgccgg gctcaagcac 1380
aacaccgatg tttacgggtg accgggtgag gcgattgaat tcattttcgt cgggtgatttc 1440
aaccatgagg cgtattttccg caccaaggac aacgcggatc tgttcctgag ttacagcgcg 1500
gtatcgggca agggcttgct gtacaacacg cccaaccagg ccggttatcg tgttcagcct 1560
tatggtgtgc tgtggacgat tgagaatacc tactggaatg atttctctg gtacaacagc 1620
tcgaacgacc gcatctatgt cagcggcacc ggcgtgcc acaagtcaca ctcccagtgg 1680
attattgacg gcttgcagtg a 1701

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<210> 80

<211> 566

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<221> SIGNAL

<222> (1)...(23)

<400> 80

```

Met Arg Asn Phe Ser Lys Gly Leu Thr Ser Ile Leu Leu Ser Ile Ala
 1          5          10          15
Thr Ser Thr Ser Ala Met Ala Phe Thr Gln Ile Gly Ala Gly Gly Ala
 20          25          30
Ile Pro Met Gly His Glu Trp Leu Thr Arg Arg Ser Ala Leu Glu Leu
 35          40          45
Leu Asn Ala Asp Asn Leu Val Gly Asn Asp Pro Ala Asp Pro Arg Leu
 50          55          60
Gly Trp Ser Glu Gly Leu Ala Asn Asn Leu Asp Leu Ser Asn Ala Gln
 65          70          75          80
Asn Glu Val Gln Arg Ile Lys Ser Ile Thr Lys Ser His Ala Leu Tyr
 85          90          95
Glu Pro Arg Tyr Asp Asp Val Phe Ala Ala Ile Val Gly Glu Arg Trp
100          105          110
Val Asp Thr Ala Gly Phe Asn Val Ala Lys Ala Thr Val Gly Lys Ile
115          120          125
Asp Cys Phe Ser Ala Val Ala Gln Glu Pro Ala Asp Val Gln Gln Asp
130          135          140
His Phe Met Arg Arg Tyr Asp Asp Val Gly Gly Gln Gly Gly Val Asn
145          150          155          160
Ala Ala Arg Arg Ala Gln Gln Arg Phe Ile Asn His Phe Val Asn Ala

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```

<400> 81
atgaaaaaga aattatgtac aatggctctt gtaacagcaa tatcttctgg tgttggttacg      60
attccaacag aagcacaagc ttgtggaata ggcgaagtaa tgaaacagga gaaccaagag      120
cacaaacgtg tgaaaagatg gtctgcggag catccgcac attcaaata aagtacacat      180
ttatggattg cacgaaatgc gattcaaatt atgagtcgta atcaagataa gacggttcaa      240
gaaaatgaat tacaattttt aaatactcct gaatataagg agttatttga aagaggtctt      300
tatgatgctg attaccttga tgaattttaac gatggaggta cagggtacaat cggcattgat      360
gggctaatta gaggaggggtg gaaatctcat ttttacgac cggatacaag aaagaactat      420
aaaggggaag aagaaccaac agctctttca caaggagata aatattttta attagcaggt      480
gaatacttta agaagggcga ccaaaaacaa gctttttatt atttaggtgt tgcaacgcat      540
tactttacag atgctactca accaatgcat gctgctaatt ttacagccgt cgacacgagt      600
gcttttaaagt ttcatagcgc ttttgaaaat tatgtgacga caattcagac acagtatgaa      660
gtatctgatg gtgagggcgt atataattta gtgaattcta atgatccaaa acagtggatc      720
catgaaacag cgagactcgc aaaagtggaa atcgggaaca ttaccaatga cgagattaaa      780
tctcactata ataaaggaaa caatgctctt tggcaacaag aagttatgcc agctgtccag      840
aggagtttag agaacgcaca aagaacacg gcgggattta ttcatttatg gtttaaaaca      900
tttgttggca atactgccgc tgaagaaatt gaaaatactg tagtgaaaga ttctaaagga      960
gaagcaatac aagataataa aaaatacttc gtagtgccaa gtgagtttct aaatagaggt      1020
ttgacctttg aagtatatgc aaggaatgac tatgcactat tatctaatta cgtagatgat      1080
agtaaaagttc atggtacgcc agttcagttt gtattttgata aagataataa cgggtatcctt      1140
catcgaggag aaagtgtact gctgaaaatg acgcaatcta actatgataa ttacgtattt      1200
ctaaactact ctaacttgac aaactgggta catcttgccg aacaaaaaac aaatactgca      1260
cagttttaaag tgtatccaaa tccgaataac ccatctgaat attacctata tacagatgga      1320
taccacagtaa attatcaaga aaatggtaac ggaaagagct ggattgtgtt aggaaagaaa      1380
acagatacac caaaagcttg gaaatttata caggctgaat ag                                1422

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```

<210> 82
<211> 473
<212> PRT
<213> Unknown

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<220>
<223> Obtained from an environmental sample.

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```

<221> SIGNAL
<222> (1)...(25)

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```

<400> 82
Met Lys Lys Lys Leu Cys Thr Met Ala Leu Val Thr Ala Ile Ser Ser
 1          5          10          15
Gly Val Val Thr Ile Pro Thr Glu Ala Gln Ala Cys Gly Ile Gly Glu
 20          25          30
Val Met Lys Gln Glu Asn Gln Glu His Lys Arg Val Lys Arg Trp Ser
 35          40          45
Ala Glu His Pro His His Ser Asn Glu Ser Thr His Leu Trp Ile Ala
 50          55          60
Arg Asn Ala Ile Gln Ile Met Ser Arg Asn Gln Asp Lys Thr Val Gln
 65          70          75          80
Glu Asn Glu Leu Gln Phe Leu Asn Thr Pro Glu Tyr Lys Glu Leu Phe
 85          90          95
Glu Arg Gly Leu Tyr Asp Ala Asp Tyr Leu Asp Glu Phe Asn Asp Gly
100          105          110
Gly Thr Gly Thr Ile Gly Ile Asp Gly Leu Ile Arg Gly Gly Trp Lys
115          120          125
Ser His Phe Tyr Asp Pro Asp Thr Arg Lys Asn Tyr Lys Gly Glu Glu
130          135          140
Glu Pro Thr Ala Leu Ser Gln Gly Asp Lys Tyr Phe Lys Leu Ala Gly
145          150          155          160

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Glu	Tyr	Phe	Lys	Lys	Gly	Asp	Gln	Lys	Gln	Ala	Phe	Tyr	Tyr	Leu	Gly
			165						170					175	
Val	Ala	Thr	His	Tyr	Phe	Thr	Asp	Ala	Thr	Gln	Pro	Met	His	Ala	Ala
			180					185					190		
Asn	Phe	Thr	Ala	Val	Asp	Thr	Ser	Ala	Leu	Lys	Phe	His	Ser	Ala	Phe
		195					200					205			
Glu	Asn	Tyr	Val	Thr	Thr	Ile	Gln	Thr	Gln	Tyr	Glu	Val	Ser	Asp	Gly
	210					215					220				
Glu	Gly	Val	Tyr	Asn	Leu	Val	Asn	Ser	Asn	Asp	Pro	Lys	Gln	Trp	Ile
225					230					235					240
His	Glu	Thr	Ala	Arg	Leu	Ala	Lys	Val	Glu	Ile	Gly	Asn	Ile	Thr	Asn
				245					250					255	
Asp	Glu	Ile	Lys	Ser	His	Tyr	Asn	Lys	Gly	Asn	Asn	Ala	Leu	Trp	Gln
			260				265						270		
Gln	Glu	Val	Met	Pro	Ala	Val	Gln	Arg	Ser	Leu	Glu	Asn	Ala	Gln	Arg
		275					280					285			
Asn	Thr	Ala	Gly	Phe	Ile	His	Leu	Trp	Phe	Lys	Thr	Phe	Val	Gly	Asn
	290					295					300				
Thr	Ala	Ala	Glu	Glu	Ile	Glu	Asn	Thr	Val	Val	Lys	Asp	Ser	Lys	Gly
305					310					315					320
Glu	Ala	Ile	Gln	Asp	Asn	Lys	Lys	Tyr	Phe	Val	Val	Pro	Ser	Glu	Phe
				325					330					335	
Leu	Asn	Arg	Gly	Leu	Thr	Phe	Glu	Val	Tyr	Ala	Arg	Asn	Asp	Tyr	Ala
			340					345					350		
Leu	Leu	Ser	Asn	Tyr	Val	Asp	Asp	Ser	Lys	Val	His	Gly	Thr	Pro	Val
		355					360					365			
Gln	Phe	Val	Phe	Asp	Lys	Asp	Asn	Asn	Gly	Ile	Leu	His	Arg	Gly	Glu
	370					375					380				
Ser	Val	Leu	Leu	Lys	Met	Thr	Gln	Ser	Asn	Tyr	Asp	Asn	Tyr	Val	Phe
385					390					395					400
Leu	Asn	Tyr	Ser	Asn	Leu	Thr	Asn	Trp	Val	His	Leu	Ala	Gln	Gln	Lys
				405					410					415	
Thr	Asn	Thr	Ala	Gln	Phe	Lys	Val	Tyr	Pro	Asn	Pro	Asn	Asn	Pro	Ser
			420					425					430		
Glu	Tyr	Tyr	Leu	Tyr	Thr	Asp	Gly	Tyr	Pro	Val	Asn	Tyr	Gln	Glu	Asn
		435					440					445			
Gly	Asn	Gly	Lys	Ser	Trp	Ile	Val	Leu	Gly	Lys	Lys	Thr	Asp	Thr	Pro
	450					455					460				
Lys	Ala	Trp	Lys	Phe	Ile	Gln	Ala	Glu							
465						470									

<210> 83

<211> 1290

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 83

atgaaaaaga	tagtgattta	ttcatttgta	gcaggggtta	tgacatcagg	cggcgtat	60
gccgccagt	g	g	g	g	g	120
caggacagg	g	g	g	g	g	180
gatggccagg	g	g	g	g	g	240
tatgcgaag	g	g	g	g	g	300
gaagtacc	g	g	g	g	g	360
aactccact	g	g	g	g	g	420
tggaatca	g	g	g	g	g	480
gtggtcttt	g	g	g	g	g	540

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gtgccgaata gtacctcctg gttattgggc catttctcta acggaaagct ttggcatgaa      600
tacctttcca cggatttgaa tctgcctagc tatgtgtggg cgactggcaa tgcggagagt      660
ggagagaaac ccttctttta cggattcagt aagcagggtg attctttcag ggattatcac      720
gctcgcacta aaggctacga tattagcaag acgttgttta ccgttctggt tgggtgaaat      780
gattttataa cggggggaaa aagcgccgat gaggtcattg agcaatatac ggtgtcattg      840
aactacttgg ctcaactagg ggcgaagcag gttgcaattt tccgcttgcc agatttttca      900
gtgataccca gcgtttcaac gtggacagag gctgataagg acaaactgag agagaatagt      960
gttcagttta atgaccaagc cgagaagctg atcgctaaac taaacgcggc acatccccaa     1020
acgacgtttt atacgctgag gttggatgac gcttttaagc aggtgttgga aaacagcgac     1080
caatacggct ttgttaataa gactgatacc tgcctggata tttcccaagg cggatacaac     1140
tatgccattg gggcccgcgc gaaaacggca tgtaagagca gcaatgcggc gtttgtattc     1200
tgggacaata tgcattccgac caccaaaaca cacggattgt tggccgatct tttaaaagat     1260
gatgtggtac gcggcctcgc tgcgccatga                                     1290

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<210> 84
 <211> 429
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(22)

```

<400> 84
Met Lys Lys Ile Val Ile Tyr Ser Phe Val Ala Gly Val Met Thr Ser
 1               5               10               15
Gly Gly Val Phe Ala Ala Ser Asp Asn Ile Val Glu Thr Ser Thr Pro
                20                25                30
Pro Gln His Gln Ala Pro Ser Arg Gln Asp Arg Ala Leu Phe Ala Gly
                35                40                45
Asp Thr Thr Thr Tyr Ile Lys Cys Val Tyr Lys Val Asp Gly Gln Asp
 50               55               60
Asp Ser Asn Pro Ser Ser Trp Leu Trp Ala Lys Val Gly Ser Asn
65               70               75               80
Tyr Ala Lys Leu Lys Gly Tyr Trp Tyr Asn Ser Met Pro Leu Ala Asn
                85                90                95
Met Phe Tyr Thr Glu Val Pro Tyr Ala Glu Val Met Asp Leu Cys Asn
                100               105               110
Ser Thr Leu Lys Ala Val Gly Ala Asn Ser Thr Leu Val Ile Pro Tyr
                115               120               125
Ala Ser Asp Tyr Thr Leu Ser Tyr Tyr Tyr Val Ile Trp Asn Gln Gly
 130               135               140
Ala Asn Gln Pro Val Ile Asn Val Gly Gly Arg Glu Leu Asp Arg Met
145               150               155               160
Val Val Phe Gly Asp Ser Leu Ser Asp Thr Val Asn Val Tyr Asn Gly
                165               170               175
Ser Tyr Gly Thr Val Pro Asn Ser Thr Ser Trp Leu Leu Gly His Phe
                180               185               190
Ser Asn Gly Lys Leu Trp His Glu Tyr Leu Ser Thr Val Leu Asn Leu
 195               200               205
Pro Ser Tyr Val Trp Ala Thr Gly Asn Ala Glu Ser Gly Glu Lys Pro
 210               215               220
Phe Phe Asn Gly Phe Ser Lys Gln Val Asp Ser Phe Arg Asp Tyr His
225               230               235               240
Ala Arg Thr Lys Gly Tyr Asp Ile Ser Lys Thr Leu Phe Thr Val Leu
                245               250               255
Phe Gly Gly Asn Asp Phe Ile Thr Gly Gly Lys Ser Ala Asp Glu Val

```


Met	Thr	Thr	Gln	Phe	Arg	Asn	Leu	Ile	Phe	Glu	Gly	Gly	Gly	Val	Lys
1				5					10					15	
Gly	Val	Ala	Tyr	Ile	Gly	Ala	Met	Gln	Ile	Leu	Glu	Asn	Arg	Gly	Val
			20					25					30		
Leu	Gln	Asp	Ile	Arg	Arg	Val	Gly	Gly	Cys	Ser	Ala	Gly	Ala	Ile	Asn
		35					40					45			
Ala	Leu	Ile	Phe	Ala	Leu	Gly	Tyr	Thr	Val	Arg	Glu	Gln	Lys	Glu	Ile
	50					55					60				
Leu	Gln	Ala	Thr	Asp	Phe	Asn	Gln	Phe	Met	Asp	Asn	Ser	Trp	Gly	Val
65					70				75						80
Ile	Arg	Asp	Ile	Arg	Arg	Leu	Ala	Arg	Asp	Phe	Gly	Trp	Asn	Lys	Gly
				85					90					95	
Asp	Phe	Phe	Ser	Ser	Trp	Ile	Gly	Asp	Leu	Ile	His	Arg	Arg	Leu	Gly
			100					105					110		
Asn	Arg	Arg	Ala	Thr	Phe	Lys	Asp	Leu	Gln	Lys	Ala	Lys	Leu	Pro	Asp
		115					120					125			
Leu	Tyr	Val	Ile	Gly	Thr	Asn	Leu	Ser	Thr	Gly	Phe	Ala	Glu	Val	Phe
	130					135					140				
Ser	Ala	Glu	Arg	His	Pro	Asp	Met	Glu	Leu	Ala	Thr	Ala	Val	Arg	Ile
145					150					155					160
Ser	Met	Ser	Ile	Pro	Leu	Phe	Phe	Ala	Ala	Val	Arg	His	Gly	Asp	Arg
				165					170					175	
Gln	Asp	Val	Tyr	Val	Asp	Gly	Gly	Val	Gln	Leu	Asn	Tyr	Pro	Ile	Lys
		180						185					190		
Leu	Phe	Asp	Arg	Glu	Arg	Tyr	Ile	Asp	Leu	Ala	Lys	Asp	Pro	Gly	Ala
	195						200					205			
Val	Arg	Arg	Thr	Gly	Tyr	Tyr	Asn	Lys	Glu	Asn	Ala	Arg	Phe	Gln	Leu
	210					215					220				
Asp	Arg	Pro	Gly	His	Ser	Pro	Tyr	Val	Tyr	Asn	Arg	Gln	Thr	Leu	Gly
225					230					235					240
Leu	Arg	Leu	Asp	Ser	Arg	Glu	Glu	Ile	Gly	Leu	Phe	Arg	Tyr	Asp	Glu
			245						250					255	
Pro	Leu	Lys	Gly	Lys	Pro	Ile	Lys	Ser	Phe	Thr	Asp	Tyr	Ala	Arg	Gln
		260						265					270		
Leu	Phe	Gly	Ala	Leu	Met	Asn	Ala	Gln	Glu	Lys	Ile	His	Leu	His	Gly
	275					280						285			
Asp	Asp	Trp	Gln	Arg	Thr	Ile	Tyr	Ile	Asp	Thr	Leu	Asp	Val	Gly	Thr
	290					295					300				
Thr	Asp	Phe	Asn	Leu	Ser	Asp	Ala	Thr	Lys	Gln	Ala	Leu	Ile	Glu	Gln
305					310					315					320
Gly	Ile	Asn	Gly	Thr	Glu	Asn	Tyr	Phe	Glu	Trp	Phe	Asp	Asn	Pro	Leu
			325						330					335	
Glu	Lys	Pro	Val	Asn	Arg	Val	Glu	Ser							
			340					345							

<210> 87

<211> 870

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 87

atgtcaaaga	aactcgtaat	atcggtagcg	ggcggcggag	cactcggaat	cggaccactc	60
gcattcctgt	gcaagattga	acagatgctg	ggaaagaaga	taccccaggt	tgcgaggca	120
tacgccggca	cttcaaccgg	agcaataatt	gcggcaggac	tggccgaagg	ctactccgcg	180
catgaactgt	tcgacctata	caaatacaat	ctcagcaaga	tattcaccaa	atacagctgg	240
tacaaacgcc	tcgagccaac	gtgtcctaca	tatgacaaca	gtaacctaaa	gaaattactg	300

aaggacaaat	tcaagggcaa	ggtcggcgac	tggaaaactc	ccgtatacat	cccggcaaca	360
cacatgaacg	gccaatccgt	agaaaagggtg	tgggacttgg	gtgacaagaa	tggtgacaag	420
tggtttgcca	ttctgacaag	taccgcgga	ccaacctatt	tcgactgcat	atacgacgac	480
gagaagaact	gctacatcga	tggtggcatg	tggtgcaacg	caccaatcga	tggtgcttaat	540
gcaggcctga	tcaagtccgg	ctgggtccaac	tacaagggtcc	tggaacctgga	gaccggcatg	600
gacacaccga	atacggaag	cggaaacaag	acacttctcg	gatgggggga	atacatcata	660
agcaactggg	tagcccgttc	cagcaagtcc	ggcgaatacg	aggtaaaggc	cataatcggg	720
gaagacaatg	tatgtgttgc	ccgtccatac	gtaagcaaga	aaccgaagat	ggatgacgtg	780
gacagcaaga	cgctggatga	agtcgtggat	atctgggaaa	actacttcta	cgccaagcag	840
aaagacatcg	catcgtggct	gaaaatctag				870

<210> 88

<211> 289

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 88

Met	Ser	Lys	Lys	Leu	Val	Ile	Ser	Val	Ala	Gly	Gly	Gly	Ala	Leu	Gly
1				5					10					15	
Ile	Gly	Pro	Leu	Ala	Phe	Leu	Cys	Lys	Ile	Glu	Gln	Met	Leu	Gly	Lys
			20					25					30		
Lys	Ile	Pro	Gln	Val	Ala	Gln	Ala	Tyr	Ala	Gly	Thr	Ser	Thr	Gly	Ala
		35					40					45			
Ile	Ile	Ala	Ala	Gly	Leu	Ala	Glu	Gly	Tyr	Ser	Ala	His	Glu	Leu	Phe
	50					55					60				
Asp	Leu	Tyr	Lys	Ser	Asn	Leu	Ser	Lys	Ile	Phe	Thr	Lys	Tyr	Ser	Trp
65					70					75					80
Tyr	Lys	Arg	Leu	Gln	Pro	Thr	Cys	Pro	Thr	Tyr	Asp	Asn	Ser	Asn	Leu
				85					90					95	
Lys	Lys	Leu	Leu	Lys	Asp	Lys	Phe	Lys	Gly	Lys	Val	Gly	Asp	Trp	Lys
			100					105					110		
Thr	Pro	Val	Tyr	Ile	Pro	Ala	Thr	His	Met	Asn	Gly	Gln	Ser	Val	Glu
		115				120						125			
Lys	Val	Trp	Asp	Leu	Gly	Asp	Lys	Asn	Val	Asp	Lys	Trp	Phe	Ala	Ile
	130					135					140				
Leu	Thr	Ser	Thr	Ala	Ala	Pro	Thr	Tyr	Phe	Asp	Cys	Ile	Tyr	Asp	Asp
145					150					155					160
Glu	Lys	Asn	Cys	Tyr	Ile	Asp	Gly	Gly	Met	Trp	Cys	Asn	Ala	Pro	Ile
				165					170					175	
Asp	Val	Leu	Asn	Ala	Gly	Leu	Ile	Lys	Ser	Gly	Trp	Ser	Asn	Tyr	Lys
			180					185					190		
Val	Leu	Asp	Leu	Glu	Thr	Gly	Met	Asp	Thr	Pro	Asn	Thr	Glu	Ser	Gly
		195					200					205			
Asn	Lys	Thr	Leu	Leu	Gly	Trp	Gly	Glu	Tyr	Ile	Ile	Ser	Asn	Trp	Val
	210					215						220			
Ala	Arg	Ser	Ser	Lys	Ser	Gly	Glu	Tyr	Glu	Val	Lys	Ala	Ile	Ile	Gly
225					230					235					240
Glu	Asp	Asn	Val	Cys	Val	Ala	Arg	Pro	Tyr	Val	Ser	Lys	Lys	Pro	Lys
				245					250					255	
Met	Asp	Asp	Val	Asp	Ser	Lys	Thr	Leu	Asp	Glu	Val	Val	Asp	Ile	Trp
			260					265					270		
Glu	Asn	Tyr	Phe	Tyr	Ala	Lys	Gln	Lys	Asp	Ile	Ala	Ser	Trp	Leu	Lys
		275					280						285		

Ile

<210> 89
 <211> 1422
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 89
 atgaaaaaga aattatgtac actggctttt gtaacagcaa tatcttctat cgctatcaca 60
 attccaacag aagcacaagc ttgtggaata ggcgaagtaa tgaaacagga gaaccaagag 120
 cacaacagtg tgaagagatg gtctgcggaa catccacatc atcctaataa aagtacgcac 180
 ttatggattg cgcgaaatgc aattcaata atggcccgtg atcaagataa gacgggttcaa 240
 gaaaatgaat tacaattttt aaatactcct gaatataagg agttatttga aagagggtcct 300
 tatgatgctg attaccttga tgaatttaac gatggaggta cagggtacaat cggcattgat 360
 gggctaatta aaggagggtg gaaatctcat ttttacgata ccgatacgag aaagaactat 420
 aaaggggaag aagaaccaac agctctctct caaggagata aatattttta attagcaggc 480
 gattacttta agaaagagga ttggaaacaa gcttttctatt atttaggtgt tgcgacgcac 540
 tacttcacag atgctactca gccaatgcat gctgctaatt ttacagccgt cgacacgagt 600
 gctttaaagt ttcatagcgc ttttgaaaat tatgtgacga caattcagac acagtatgaa 660
 gtatctgatg gtgagggtgt atataattta gtgaattcta atgatccaaa acagtggatc 720
 catgaaacag cgagactcgc aaaagtggaa atcgggaaca ttaccaatga cgagattaaa 780
 tctcactata ataaaggaaa caatgctctt tggcaacaag aagttatgcc agctgtccag 840
 aggagtttag agaacgcaca aagaaacacg gcgggattta ttcatttatg gtttaaaaca 900
 tttgttgga atactgccgc tgaagaaatt gaaaatactg tagtgaaaga ttctaaagga 960
 gaagcaatac aagataataa aaaatacttc gtagtgccaa gtgagtttct aaatagaggt 1020
 ttgacctttg aagtatatgc aaggaatgac tatgcactat tatctaatta cgtagatgat 1080
 agtaaagttc atggtacgcc agttcagttt gtatttgata aagataataa cggtatcctt 1140
 catcgaggag aaagtatact gctgaaaatg acgcaatcta actatgataa ttacgtatct 1200
 ctaaaactact ctaacttgac aaactgggta catcttgccg aacaaaaaac aaatactgca 1260
 cagtttaaag tgtatccaaa tccgaataac ccatctgaat attacctata tacagatgga 1320
 taccagtaa attatcaaga aaatggtaac ggaaagagct ggatttgtgt aggaaagaaa 1380
 acagatacac caaaagcttg gaaatttata caggctgaat ag 1422

<210> 90
 <211> 473
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(25)

<400> 90
 Met Lys Lys Lys Leu Cys Thr Leu Ala Phe Val Thr Ala Ile Ser Ser
 1 5 10 15
 Ile Ala Ile Thr Ile Pro Thr Glu Ala Gln Ala Cys Gly Ile Gly Glu
 20 25 30
 Val Met Lys Lys Gln Glu Asn Gln Glu His Lys Arg Val Lys Arg Trp Ser
 35 40 45
 Ala Glu His Pro His His Pro Asn Glu Ser Thr His Leu Trp Ile Ala
 50 55 60
 Arg Asn Ala Ile Gln Ile Met Ala Arg Asn Gln Asp Lys Thr Val Gln
 65 70 75 80
 Glu Asn Glu Leu Gln Phe Leu Asn Thr Pro Glu Tyr Lys Glu Leu Phe
 85 90 95
 Glu Arg Gly Leu Tyr Asp Ala Asp Tyr Leu Asp Glu Phe Asn Asp Gly


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ggttgtagtg cgggtgcat taacgcgctg atttttgcgc tgggttacac agtccgtgag 180
caaaaagaga tcttacaaat taccgatttt aaccagttta tggataactc gtgggggtgtt 240
attcgggata ttcgcaggct tgcgagagaa tttggctgga ataagggtaa cttctttaat 300
acctggatag gtgatttgat tcatcgctgt ttgggtaatc gccgagccac gttcaaagat 360
ctgcaaaagg caaagcttcc tgatctttat gtcacggtta ctaatctgtc tacagggttt 420
gcagagggtt tttctgccga aagacacccc gatatggagc tggcgacagc ggtgcgtatc 480
tccatgtcga taccgctgtt ctttgcggcc gtgcgtcacg gtgatcgaca agatgtgtat 540
gtcgtatggg gtgtgcagct taactacccg atcaagctgt ttgatcgaac tcgttatatt 600
gacctcgcca aagatccggg tgctgctcgc cacacgggtt attacaataa agagaatgct 660
cgttttcagc ttgagcgacc gggccacagt ccttatgtgt acaatcgcca aacattaggc 720
ttgcgtcttg acagtcgtga agagatagcg ctgtttcgtt acgacgaacc tcttcagggt 780
aaacccatta agtccttcac tgactacgct cgacaacttt ttggtgcgct gaagaatgca 840
caggaaaaca ttcacctaca tggcgatgat tggcagcgca cggctctatat cgatacattg 900
gatgtgggta cgacggattt caatctttct gatgcaacca agcaagcact gattgaacag 960
ggaattaacg gcaccgaaaa ttatttcgag tggtttgata atccgtttga gaagcctgtg 1020
aatagagtgg agtaa 1035

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<210> 92

<211> 344

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 92

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Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
1           5           10           15
Gly Ile Ala Tyr Val Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
20           25           30
Leu Gln Asp Ile His Arg Val Gly Gly Cys Ser Ala Gly Ala Ile Asn
35           40           45
Ala Leu Ile Phe Ala Leu Gly Tyr Thr Val Arg Glu Gln Lys Glu Ile
50           55           60
Leu Gln Ile Thr Asp Phe Asn Gln Phe Met Asp Asn Ser Trp Gly Val
65           70           75           80
Ile Arg Asp Ile Arg Arg Leu Ala Arg Glu Phe Gly Trp Asn Lys Gly
85           90           95
Asn Phe Phe Asn Thr Trp Ile Gly Asp Leu Ile His Arg Arg Leu Gly
100          105          110
Asn Arg Arg Ala Thr Phe Lys Asp Leu Gln Lys Ala Lys Leu Pro Asp
115          120          125
Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ala Glu Val Phe
130          135          140
Ser Ala Glu Arg His Pro Asp Met Glu Leu Ala Thr Ala Val Arg Ile
145          150          155          160
Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Val Arg His Gly Asp Arg
165          170          175
Gln Asp Val Tyr Val Asp Gly Gly Val Gln Leu Asn Tyr Pro Ile Lys
180          185          190
Leu Phe Asp Arg Thr Arg Tyr Ile Asp Leu Ala Lys Asp Pro Gly Ala
195          200          205
Ala Arg His Thr Gly Tyr Tyr Asn Lys Glu Asn Ala Arg Phe Gln Leu
210          215          220
Glu Arg Pro Gly His Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
225          230          235          240
Leu Arg Leu Asp Ser Arg Glu Glu Ile Ala Leu Phe Arg Tyr Asp Glu
245          250          255
Pro Leu Gln Gly Lys Pro Ile Lys Ser Phe Thr Asp Tyr Ala Arg Gln

```


Asn	Ala	Asp	Tyr	Phe	Lys	Gly	His	Asp	Ala	Leu	Leu	Leu	Asn	Glu	Leu
65					70					75					80
Phe	Asp	Asn	Gly	Asn	Ser	Asn	Val	Leu	Leu	Met	Asn	Leu	Ser	Lys	Glu
				85					90					95	
Tyr	Thr	Tyr	Gln	Thr	Pro	Val	Leu	Gly	Arg	Ser	Met	Ser	Gly	Trp	Asp
			100					105					110		
Glu	Thr	Arg	Gly	Ser	Tyr	Ser	Asn	Phe	Val	Pro	Glu	Asp	Gly	Gly	Val
			115				120					125			
Ala	Ile	Ile	Ser	Lys	Trp	Pro	Ile	Val	Glu	Lys	Ile	Gln	His	Val	Tyr
	130					135					140				
Ala	Asn	Gly	Cys	Gly	Ala	Asp	Tyr	Tyr	Ala	Asn	Lys	Gly	Phe	Val	Tyr
145					150					155					160
Ala	Lys	Val	Gln	Lys	Gly	Asp	Lys	Phe	Tyr	His	Leu	Ile	Ser	Thr	His
			165					170						175	
Ala	Gln	Ala	Glu	Asp	Thr	Gly	Cys	Asp	Gln	Gly	Glu	Gly	Ala	Glu	Ile
			180					185					190		
Arg	His	Ser	Gln	Phe	Gln	Glu	Ile	Asn	Asp	Phe	Ile	Lys	Asn	Lys	Asn
		195					200					205			
Ile	Pro	Lys	Asp	Glu	Val	Val	Phe	Ile	Gly	Gly	Asp	Phe	Asn	Val	Met
	210					215					220				
Lys	Ser	Asp	Thr	Thr	Glu	Tyr	Asn	Ser	Met	Leu	Ser	Thr	Leu	Asn	Val
225					230					235					240
Asn	Ala	Pro	Thr	Glu	Tyr	Leu	Gly	His	Asn	Ser	Thr	Trp	Asp	Pro	Glu
			245						250					255	
Thr	Asn	Ser	Ile	Thr	Gly	Tyr	Asn	Tyr	Pro	Asp	Tyr	Ala	Pro	Gln	His
			260					265					270		
Leu	Asp	Tyr	Ile	Phe	Val	Glu	Lys	Asp	His	Lys	Gln	Pro	Ser	Ser	Trp
		275					280					285			
Val	Asn	Glu	Thr	Ile	Thr	Pro	Lys	Ser	Pro	Thr	Trp	Lys	Ala	Ile	Tyr
	290					295					300				
Glu	Tyr	Asn	Asp	Tyr	Ser	Asp	His	Tyr	Pro	Val	Lys	Ala	Tyr	Val	Lys
305					310					315					320

<210> 95

<211> 1038

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 95

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ataggtgcga	tgcaggtgct	ggatcagcgc	ggttatattg	gtgataacat	caaacgcgtt	120
ggtggaacca	gtgcaggtgc	cataaatgcg	ctgatttatt	cgttaggata	tgacatccac	180
gaacaacaag	agatactgaa	ctctacagat	tttaaaaagt	ttatggataa	ctctttttgga	240
tttgtgaggg	atttcagaag	gctatggaat	gaatttggat	ggaatagagg	agactttttt	300
cttaaagtgt	caggtgagct	gatcaaaaat	aaattgggca	cctcaaaaagc	cacctttcag	360
gatttgaagg	atgccgggtca	gccagatttg	tatgtaattg	gaacaaattt	atcgacgggg	420
ttttccgaga	ctttttcata	tgaacgtcac	cccgatatga	ctcttgacga	agccgtaaga	480
atcagtatgt	cgcttccgct	gtttttcagg	gctgtgcggg	tgggcgacag	gaatgatgta	540
tatgtggatg	gtgggggttca	gctcaattac	ccggtaaaac	tatttgatcg	tgaaaaatat	600
attgatattg	ataatgaggc	ggctgcagca	cgatttactg	attattacaa	caaagaaaat	660
gccagatttt	cgctccagcg	gcctggacga	agcccctatg	tatataatcg	tcaaaccctt	720
ggtttgagac	tggatacagc	cgaagaaatt	gcgcttttca	ggtacgatga	acccattcag	780
gggaaagaga	tcaaacgggt	tccggaatat	gcaaaggctc	tgatcggcgc	actaatgcag	840
gtgcaggaaa	acatacatct	ccacagtgac	gactggcagc	gtacgctgta	tatcaatacc	900
ctggatgtaa	aaaccacaga	ttttgaatta	accgatgaga	aaaaaaaagga	actggtagaa	960
cagggaatcc	ttggcgcgga	aacctatttc	aaatggtttg	aagacaggga	tgaagtagtt	1020

gtaaaccgcc ttgcttag

1038

<210> 96

<211> 345

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 96

Met	Ala	Ser	Gln	Phe	Arg	Asn	Leu	Val	Phe	Glu	Gly	Gly	Gly	Val	Lys
1				5					10					15	
Gly	Ile	Ala	Tyr	Ile	Gly	Ala	Met	Gln	Val	Leu	Asp	Gln	Arg	Gly	Tyr
		20					25						30		
Leu	Gly	Asp	Asn	Ile	Lys	Arg	Val	Gly	Gly	Thr	Ser	Ala	Gly	Ala	Ile
		35					40					45			
Asn	Ala	Leu	Ile	Tyr	Ser	Leu	Gly	Tyr	Asp	Ile	His	Glu	Gln	Gln	Glu
		50				55					60				
Ile	Leu	Asn	Ser	Thr	Asp	Phe	Lys	Lys	Phe	Met	Asp	Asn	Ser	Phe	Gly
65					70					75					80
Phe	Val	Arg	Asp	Phe	Arg	Arg	Leu	Trp	Asn	Glu	Phe	Gly	Trp	Asn	Arg
			85						90					95	
Gly	Asp	Phe	Phe	Leu	Lys	Trp	Ser	Gly	Glu	Leu	Ile	Lys	Asn	Lys	Leu
			100					105						110	
Gly	Thr	Ser	Lys	Ala	Thr	Phe	Gln	Asp	Leu	Lys	Asp	Ala	Gly	Gln	Pro
		115					120						125		
Asp	Leu	Tyr	Val	Ile	Gly	Thr	Asn	Leu	Ser	Thr	Gly	Phe	Ser	Glu	Thr
		130				135					140				
Phe	Ser	Tyr	Glu	Arg	His	Pro	Asp	Met	Thr	Leu	Ala	Glu	Ala	Val	Arg
145					150					155					160
Ile	Ser	Met	Ser	Leu	Pro	Leu	Phe	Phe	Arg	Ala	Val	Arg	Leu	Gly	Asp
			165						170					175	
Arg	Asn	Asp	Val	Tyr	Val	Asp	Gly	Gly	Val	Gln	Leu	Asn	Tyr	Pro	Val
			180					185					190		
Lys	Leu	Phe	Asp	Arg	Glu	Lys	Tyr	Ile	Asp	Met	Asp	Asn	Glu	Ala	Ala
		195					200					205			
Ala	Ala	Arg	Phe	Thr	Asp	Tyr	Tyr	Asn	Lys	Glu	Asn	Ala	Arg	Phe	Ser
		210				215						220			
Leu	Gln	Arg	Pro	Gly	Arg	Ser	Pro	Tyr	Val	Tyr	Asn	Arg	Gln	Thr	Leu
225					230					235					240
Gly	Leu	Arg	Leu	Asp	Thr	Ala	Glu	Glu	Ile	Ala	Leu	Phe	Arg	Tyr	Asp
			245						250					255	
Glu	Pro	Ile	Gln	Gly	Lys	Glu	Ile	Lys	Arg	Phe	Pro	Glu	Tyr	Ala	Lys
		260						265					270		
Ala	Leu	Ile	Gly	Ala	Leu	Met	Gln	Val	Gln	Glu	Asn	Ile	His	Leu	His
		275					280					285			
Ser	Asp	Asp	Trp	Gln	Arg	Thr	Leu	Tyr	Ile	Asn	Thr	Leu	Asp	Val	Lys
	290					295					300				
Thr	Thr	Asp	Phe	Glu	Leu	Thr	Asp	Glu	Lys	Lys	Lys	Glu	Leu	Val	Glu
305					310					315					320
Gln	Gly	Ile	Leu	Gly	Ala	Glu	Thr	Tyr	Phe	Lys	Trp	Phe	Glu	Asp	Arg
			325						330					335	
Asp	Glu	Val	Val	Val	Asn	Arg	Leu	Ala							
		340					345								

<210> 97

<211> 1422

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 97

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attccaacag cagcagaagc ttgtggatta ggagaagtaa tcaaacaaga gaatcaagag      120
cacaaacgtg tgaaaagatg gtctgcgag catccgcac attcacatga aagtacccat      180
ttatggattg cacaaaatgc gattcaaatt atgagccgta atcaagataa gacggttcaa      240
gaaaatgaat tacaattttt aaataccctt gaatataagg agttatttga aagaggctct      300
tatgatgctg attaccttga tgaattttaac gatggaggta cagggtataat cggcattgat      360
gggctaattc gaggagggtg gaaatctcat ttctacgac ccgatacaag aaagaactat      420
aaaggggagg aagaaccaac agctctttct caaggagata aatattttta attagcaggt      480
gaatacttta agaagaatga ttggaaacag gctttctatt atttaggtgt tgcgacgcac      540
tactttacag atgctactca gccaatgcat gctgctaatt ttacagctgt cgacaggagt      600
gctataaagt ttcatagtgc ttttgaagat tatgtgacga caattcagga acagttttaa      660
gtatcagatg gagagggaag atataattta gtaaattcta atgatccgaa acagtggatc      720
catgaaacag cgagactcgc aaaagtggaa atcgggaaca ttaccaatga tgtgattaaa      780
tctcactata ataaaggaaa caatgctctt tggcgcaag aagttatgcc agctgttcag      840
agaagtttag aacaagccca aagaaatacg gcgggattta ttcatttatg gtttaaaaca      900
tatgttggaa aaacagctgc tgaagatatt gaaaatacta tagtgaaaga ttctagggga      960
gaagcaatac aagagaataa aaaatacttt gtagtaccac gtgagttttt aaatagaggc     1020
ttaacatttg aagtgtatgc tgcttatgac tatgcgttat tatctaacca tgtggatgat     1080
aataatattc atggtacacc ggttcaaatt gtatttgata aagaaaataa tgggatcctt     1140
catcaaggag aaagtgcatt gttaaagatg acacaatcca actacgataa ttatgtattt     1200
ctaaattatt ctatcataac aaattgggta catcttgcaa aaagagaaaa caatactgca     1260
cagtttaaaag tgtatccaaa tccaaataat ccaactgaat atttcatata tacagatggc     1320
tatccagtta attatcaaga aaaaggtaaa gagaaaagct ggattgtttt aggaaagaaa     1380
acggataaac caaaagcatg gaaatttata caggcggaat aa                                1422
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<210> 98

<211> 473

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<221> SIGNAL

<222> (1)...(25)

<400> 98

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 1           5           10           15
Ser Thr Ala Val Ile Pro Thr Ala Ala Glu Ala Cys Gly Leu Gly Glu
          20          25          30
Val Ile Lys Gln Glu Asn Gln Glu His Lys Arg Val Lys Arg Trp Ser
        35        40        45
Ala Glu His Pro His His Ser His Glu Ser Thr His Leu Trp Ile Ala
      50      55      60
Gln Asn Ala Ile Gln Ile Met Ser Arg Asn Gln Asp Lys Thr Val Gln
 65          70          75          80
Glu Asn Glu Leu Gln Phe Leu Asn Thr Pro Glu Tyr Lys Glu Leu Phe
          85          90          95
Glu Arg Gly Leu Tyr Asp Ala Asp Tyr Leu Asp Glu Phe Asn Asp Gly
      100      105      110
Gly Thr Gly Ile Ile Gly Ile Asp Gly Leu Ile Arg Gly Gly Trp Lys
    115          120          125
```

Ser His Phe Tyr Asp Pro Asp Thr Arg Lys Asn Tyr Lys Gly Glu Glu
 130 135 140
 Glu Pro Thr Ala Leu Ser Gln Gly Asp Lys Tyr Phe Lys Leu Ala Gly
 145 150 155 160
 Glu Tyr Phe Lys Lys Asn Asp Trp Lys Gln Ala Phe Tyr Tyr Leu Gly
 165 170 175
 Val Ala Thr His Tyr Phe Thr Asp Ala Thr Gln Pro Met His Ala Ala
 180 185 190
 Asn Phe Thr Ala Val Asp Arg Ser Ala Ile Lys Phe His Ser Ala Phe
 195 200 205
 Glu Asp Tyr Val Thr Thr Ile Gln Glu Gln Phe Lys Val Ser Asp Gly
 210 215 220
 Glu Gly Lys Tyr Asn Leu Val Asn Ser Asn Asp Pro Lys Gln Trp Ile
 225 230 235 240
 His Glu Thr Ala Arg Leu Ala Lys Val Glu Ile Gly Asn Ile Thr Asn
 245 250 255
 Asp Val Ile Lys Ser His Tyr Asn Lys Gly Asn Asn Ala Leu Trp Gln
 260 265 270
 Gln Glu Val Met Pro Ala Val Gln Arg Ser Leu Glu Gln Ala Gln Arg
 275 280 285
 Asn Thr Ala Gly Phe Ile His Leu Trp Phe Lys Thr Tyr Val Gly Lys
 290 295 300
 Thr Ala Ala Glu Asp Ile Glu Asn Thr Ile Val Lys Asp Ser Arg Gly
 305 310 315 320
 Glu Ala Ile Gln Glu Asn Lys Lys Tyr Phe Val Val Pro Ser Glu Phe
 325 330 335
 Leu Asn Arg Gly Leu Thr Phe Glu Val Tyr Ala Ala Tyr Asp Tyr Ala
 340 345 350
 Leu Leu Ser Asn His Val Asp Asp Asn Asn Ile His Gly Thr Pro Val
 355 360 365
 Gln Ile Val Phe Asp Lys Glu Asn Asn Gly Ile Leu His Gln Gly Glu
 370 375 380
 Ser Ala Leu Leu Lys Met Thr Gln Ser Asn Tyr Asp Asn Tyr Val Phe
 385 390 395 400
 Leu Asn Tyr Ser Ile Ile Thr Asn Trp Val His Leu Ala Lys Arg Glu
 405 410 415
 Asn Asn Thr Ala Gln Phe Lys Val Tyr Pro Asn Pro Asn Asn Pro Thr
 420 425 430
 Glu Tyr Phe Ile Tyr Thr Asp Gly Tyr Pro Val Asn Tyr Gln Glu Lys
 435 440 445
 Gly Lys Glu Lys Ser Trp Ile Val Leu Gly Lys Lys Thr Asp Lys Pro
 450 455 460
 Lys Ala Trp Lys Phe Ile Gln Ala Glu
 465 470

<210> 99

<211> 1053

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 99

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atgatcgccg	ggacatccac	cggcggcatc	attgcggcgg	ggctgacatg	cccgcatacct	180
gacgatgagg	agacggcggc	gtgcacgccg	accgatcttc	tcaagcttta	tgtcgatcac	240
ggcggcaaga	tcttcgagaa	aaaccgcgac	ctcggcctca	tcaaccatt	cggcctcaac	300

gatccgcgct	accagccaga	tgagctggaa	aacaggctga	aggcgcagct	cggtttgacg	360
gcgacgctcg	ataaagggt	caccaagggt	ctgatcacgg	cctatgatat	ccagcagcgg	420
caggcgctgt	tcatggcaaa	caccgacaac	gagaacagca	atttccgcta	ctgggaggga	480
gcgcggggcga	catcggccgc	acccacctat	tttccgccc	cgctgatcga	aagggttggc	540
gagaagaaca	aggacaagcg	cttcgtgcc	ttgatcgacg	gcggcgtctt	cgccaacgat	600
cctatccttg	ccgcctatgt	ggaggcgcg	aagcagaaat	ggggcaatga	cgagctcggt	660
ttcctgtcgc	ttggtaccgg	ccagcaaaac	cgcccgatcg	cctatcagga	ggccaagggc	720
tggggcattt	taggctggat	gcagccgtct	catgacacgc	cgctgatctc	gacctgatg	780
cagggaacag	cgagcaccgc	ctcctatcag	gccaatgcgc	tgctcaatcc	gcccggcacc	840
aagatcgact	attcgaccgt	ggtgacgaag	gacaacgcgg	cttcgctcag	ctatttccgt	900
ctcgaccggc	agctgagctc	gaaggagaac	gacgcgctgg	acgacgcctc	gcccgaaaac	960
atcagggcgc	tgaaggcaat	cgccgcgcaa	atcatcaagg	ataacgcgcc	ggcgctcgac	1020
gaaatcgcca	aacgcctcct	ggccaaccaa	taa			1053

<210> 100

<211> 350

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 100

Met	Ala	Lys	Arg	Phe	Ile	Leu	Ser	Ile	Asp	Gly	Gly	Gly	Ile	Arg	Gly	
1				5					10					15		
Ile	Ile	Pro	Ala	Ile	Leu	Val	Glu	Leu	Ala	Lys	Arg	Leu	Glu	Gly		
			20				25						30			
Leu	Pro	Leu	His	Lys	Ala	Phe	Asp	Met	Ile	Ala	Gly	Thr	Ser	Thr	Gly	
		35					40					45				
Gly	Ile	Ile	Ala	Ala	Gly	Leu	Thr	Cys	Pro	His	Pro	Asp	Asp	Glu	Glu	
	50					55					60					
Thr	Ala	Ala	Cys	Thr	Pro	Thr	Asp	Leu	Leu	Lys	Leu	Tyr	Val	Asp	His	
65					70					75				80		
Gly	Gly	Lys	Ile	Phe	Glu	Lys	Asn	Pro	Ile	Leu	Gly	Leu	Ile	Asn	Pro	
			85						90					95		
Phe	Gly	Leu	Asn	Asp	Pro	Arg	Tyr	Gln	Pro	Asp	Glu	Leu	Glu	Asn	Arg	
			100					105					110			
Leu	Lys	Ala	Gln	Leu	Gly	Leu	Thr	Ala	Thr	Leu	Asp	Lys	Gly	Leu	Thr	
		115					120					125				
Lys	Val	Leu	Ile	Thr	Ala	Tyr	Asp	Ile	Gln	Gln	Arg	Gln	Ala	Leu	Phe	
	130					135					140					
Met	Ala	Asn	Thr	Asp	Asn	Glu	Asn	Ser	Asn	Phe	Arg	Tyr	Trp	Glu	Ala	
145					150					155				160		
Ala	Arg	Ala	Thr	Ser	Ala	Ala	Pro	Thr	Tyr	Phe	Pro	Pro	Ala	Leu	Ile	
			165						170					175		
Glu	Arg	Val	Gly	Glu	Lys	Asn	Lys	Asp	Lys	Arg	Phe	Val	Pro	Leu	Ile	
		180						185					190			
Asp	Gly	Gly	Val	Phe	Ala	Asn	Asp	Pro	Ile	Leu	Ala	Ala	Tyr	Val	Glu	
	195						200					205				
Ala	Arg	Lys	Gln	Lys	Trp	Gly	Asn	Asp	Glu	Leu	Val	Phe	Leu	Ser	Leu	
	210					215					220					
Gly	Thr	Gly	Gln	Gln	Asn	Arg	Pro	Ile	Ala	Tyr	Gln	Glu	Ala	Lys	Gly	
225					230					235				240		
Trp	Gly	Ile	Leu	Gly	Trp	Met	Gln	Pro	Ser	His	Asp	Thr	Pro	Leu	Ile	
			245						250					255		
Ser	Ile	Leu	Met	Gln	Gly	Gln	Ala	Ser	Thr	Ala	Ser	Tyr	Gln	Ala	Asn	
		260						265					270			
Ala	Leu	Leu	Asn	Pro	Pro	Gly	Thr	Lys	Ile	Asp	Tyr	Ser	Thr	Val	Val	
		275					280						285			

Thr	Lys	Asp	Asn	Ala	Ala	Ser	Leu	Ser	Tyr	Phe	Arg	Leu	Asp	Arg	Gln
290						295					300				
Leu	Ser	Ser	Lys	Glu	Asn	Asp	Ala	Leu	Asp	Asp	Ala	Ser	Pro	Glu	Asn
305					310					315					320
Ile	Arg	Ala	Leu	Lys	Ala	Ile	Ala	Ala	Gln	Ile	Ile	Lys	Asp	Asn	Ala
				325					330					335	
Pro	Ala	Leu	Asp	Glu	Ile	Ala	Lys	Arg	Ile	Leu	Ala	Asn	Gln		
			340					345					350		

<210> 101
 <211> 996
 <212> DNA
 <213> Bacteria

<400> 101

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gcccgcaccc	tggccgtgac	cgcgcagggc	gcgaccgcgcg	ccccgcgcgcg	ggccgcgcgcg	120
gaggccccgcg	ggctcaaggt	gtcacgtac	aacacgttcc	tggtctcgaa	gacgctctac	180
ccgaactggg	gccaggacca	ccgggccaag	gcgaccccca	ccgccccctt	ctaccagggc	240
caggacgtcg	tggtcctcca	ggaggccttc	gacaactccg	cgtcggacgc	cctcaaggcg	300
aactccgccc	gccagtaccc	ctaccagacc	cccgtcgtgg	gccgcggcac	cggcggctgg	360
gacgccaccg	gcgggtccta	ctcctcgacc	acccccgagg	acggcggcgt	gacgatcctc	420
agcaagtggc	cgatcgtccg	caaggagcag	tacgtctaca	aggacgcgtg	cggcgcgcgac	480
tggtgggtcca	acaagggtt	cgcctacgtc	gtgctcaacg	tgaacggcag	caagggtgcac	540
gtcctcggca	cccacgcccc	gtccaccgac	ccgggctgct	cggcgggcga	ggcgggtgcag	600
atgcggagcc	gccagttcaa	ggcgatcgac	gccttctctg	acgccaagaa	catcccggcg	660
ggcgagcagg	tgatcgtcgc	cggcgacatg	aacgtcgact	cgcgcacgcc	cgagtacggc	720
accatgctcg	ccgacgccc	tctggcggcg	gcccgcgcgc	gcaccggcca	cccgtactcc	780
ttcgacaccg	agctgaactc	gatcgctctc	gagcgctacc	cggacgaccc	gcgcgaggac	840
ctcgattacg	tcctctaccg	cgccgggaac	gcccgcgcgcg	ccaactggac	caacaacgtg	900
gtcctggaga	agagcgcccc	gtggaccgtc	tccagctggg	gcaagagcta	cacctacacc	960
aacctctccg	accactaccc	ggtcaccggc	ttctga			996

<210> 102
 <211> 331
 <212> PRT
 <213> Bacteria

<220>
 <221> SIGNAL
 <222> (1)...(39)

<400> 102

Leu	Ser	Leu	Val	Ala	Ser	Leu	Arg	Arg	Ala	Pro	Gly	Ala	Ala	Leu	Ala
1				5					10					15	
Leu	Ala	Leu	Ala	Ala	Ala	Thr	Leu	Ala	Val	Thr	Ala	Gln	Gly	Ala	Thr
			20					25					30		
Ala	Ala	Pro	Ala	Ala	Ala	Ala	Ala	Glu	Ala	Pro	Arg	Leu	Lys	Val	Leu
		35					40					45			
Thr	Tyr	Asn	Thr	Phe	Leu	Phe	Ser	Lys	Thr	Leu	Tyr	Pro	Asn	Trp	Gly
	50					55					60				
Gln	Asp	His	Arg	Ala	Lys	Ala	Ile	Pro	Thr	Ala	Pro	Phe	Tyr	Gln	Gly
65					70				75					80	
Gln	Asp	Val	Val	Val	Leu	Gln	Glu	Ala	Phe	Asp	Asn	Ser	Ala	Ser	Asp
				85				90					95		
Ala	Leu	Lys	Ala	Asn	Ser	Ala	Gly	Gln	Tyr	Pro	Tyr	Gln	Thr	Pro	Val
		100					105						110		
Val	Gly	Arg	Gly	Thr	Gly	Gly	Trp	Asp	Ala	Thr	Gly	Gly	Ser	Tyr	Ser
		115					120					125			

Ser	Thr	Thr	Pro	Glu	Asp	Gly	Gly	Val	Thr	Ile	Leu	Ser	Lys	Trp	Pro
130						135					140				
Ile	Val	Arg	Lys	Glu	Gln	Tyr	Val	Tyr	Lys	Asp	Ala	Cys	Gly	Ala	Asp
145				150						155					160
Trp	Trp	Ser	Asn	Lys	Gly	Phe	Ala	Tyr	Val	Val	Leu	Asn	Val	Asn	Gly
			165						170					175	
Ser	Lys	Val	His	Val	Leu	Gly	Thr	His	Ala	Gln	Ser	Thr	Asp	Pro	Gly
			180					185					190		
Cys	Ser	Ala	Gly	Glu	Ala	Val	Gln	Met	Arg	Ser	Arg	Gln	Phe	Lys	Ala
	195						200					205			
Ile	Asp	Ala	Phe	Leu	Asp	Ala	Lys	Asn	Ile	Pro	Ala	Gly	Glu	Gln	Val
210						215					220				
Ile	Val	Ala	Gly	Asp	Met	Asn	Val	Asp	Ser	Arg	Thr	Pro	Glu	Tyr	Gly
225				230						235					240
Thr	Met	Leu	Ala	Asp	Ala	Gly	Leu	Ala	Ala	Ala	Asp	Ala	Arg	Thr	Gly
				245					250					255	
His	Pro	Tyr	Ser	Phe	Asp	Thr	Glu	Leu	Asn	Ser	Ile	Ala	Ser	Glu	Arg
			260					265					270		
Tyr	Pro	Asp	Asp	Pro	Arg	Glu	Asp	Leu	Asp	Tyr	Val	Leu	Tyr	Arg	Ala
	275						280					285			
Gly	Asn	Ala	Arg	Pro	Ala	Asn	Trp	Thr	Asn	Asn	Val	Val	Leu	Glu	Lys
290						295					300				
Ser	Ala	Pro	Trp	Thr	Val	Ser	Ser	Trp	Gly	Lys	Ser	Tyr	Thr	Tyr	Thr
305					310					315					320
Asn	Leu	Ser	Asp	His	Tyr	Pro	Val	Thr	Gly	Phe					
				325					330						

<210> 103

<211> 2205

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 103

atgagcgaga	agaaggagat	tgcggttgcg	ttgatcatgg	ggggtggcgt	cagcctcggc	60
agtttttcgg	gtggtgcgct	tctcaagacc	atcgagctgc	tgcagcacac	tgcccgcggt	120
ccggcgaa	tcgatgtcgt	gaccggtgcc	tcggcgggaa	gcatgacgct	gggcgtagtc	180
atctaccacc	tcatgcgggg	atcgtcgacc	gatgagattc	tccgcgatct	gaggcggtcg	240
tgggtgaaa	tgatctcggt	cgacggcctc	tgtccgccga	acctgtcccg	tcacgacaag	300
ccgagcctgt	tttccgatga	gatcgctccg	aagatcgcg	ccaccgtcat	cgatatgggg	360
cgcaagctcg	aggcggctcc	tcatccgctt	ttcgccgacg	aactcgtagc	ctcgttcgca	420
ctgacgaacc	tgaacggcat	ccccgcccgt	acggagggcc	agctcatccg	gcaggcaaag	480
ggaggcgag	ggtccgagaa	gggctcgaaa	tccgttttcg	ccgacgccgt	gcagactacc	540
tttcaccacg	acgtgatg	attcggtg	cggcgcgatc	acaacgggca	aggcagcctg	600
ttcgacagcc	gttaccgggc	acgcatactc	cctccatgga	atggtgggaa	gggcggcgat	660
gcatgggaag	cctttcgcac	ggcggtggt	gcctcggggg	cgtttccggc	cgcatttcct	720
cccgtcgaga	tcagccgcaa	ccgcgacgaa	ttcaacatct	ggcccgatcg	catcgaggac	780
cagaaggcat	ttacgttcga	ttacgtggac	ggcgggggtac	ttcgcaacga	acccctccgg	840
gaggcgattc	acctggccgc	gctgcgcgat	gagggagcga	cggacatcga	gcgtgtgttc	900
atcctcatcg	accgaacat	cagcggcacc	ggcgaggtct	tcccgtcttc	ctataaccag	960
cagatcgga	tcaagccgaa	ctacgattcc	aacggcgacg	tccgacagta	cgatctcgat	1020
gtgccggact	acaccggcaa	tctgatcg	gcgatcggtc	ggctgggttc	ggtgatcgtc	1080
gggcaggcga	cgttccgcga	ctggctcaag	gctgccaaag	tgaacagcca	gatcgagtgg	1140
cgacgggaat	tgctgcccat	tctccgcgac	ctgaaccgga	accccgggga	ggaggcgcg	1200
aggggctga	acgggatgat	cgacaagatc	taccggcaaa	agtatcagcg	cgccctcgag	1260
tcaaagagcg	ttccggtcga	ggaggtggaa	cggcgcgttg	ccgaagacat	cgaacgggac	1320
ctggcgcggc	gccgttcgga	ggccggcgac	aacgacttca	ttgcccggct	cctcctgctc	1380

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gtcgacctga tgggcaacct gcgtgagaag cagaagctga acatggtggc gatcaccccc 1440
gcttccgcgc cgcacaacga cgggcgcccc ttgccgctgg ccggcaattt tatgttcagc 1500
ttcggggggt tcttcaggga ggagtacagg caatacgact tctcggtcgg cgaattcgca 1560
gcatggaacg tcctgagcac gccggcctcc gagacgccct ttcttgccga gaccgccccg 1620
aaaccgcccc cccgacctcc ccagccgccc gcaatcaatc ctacctaccg ctcactcggc 1680
ccgcccattc agcagcgggt cgaggagttc gttcgtgggc acgttcgcgc ctttatcgct 1740
tcggtcgctc cgctgggaac gagagggatc gtcacgggca agattggcgg aaagcttcga 1800
acgatgctga tggcctcgcg caacgggaaa tcagagtact tccggcttcg cctctccggc 1860
gttgacgggc tctacctccg aggctccaag ggccgcaacc tgagggcggt taacggatcg 1920
atcgacacgg tcgtcggcgt ctatatcgac gaggaagatc agcaccgcca tgagtttttc 1980
gggtcccatg tcttcggcgc gaacgggtca ggctttacga tggaaactatg ggagtccgcg 2040
ggttttttcg ggcgtgatcg tcgcgtcgct gtgatcgagt tggagaacaa ccccgcgagg 2100
ttcgcaatcg ccgccggatg caggcggcgg cccggcggtg tgctggatat ggccaggcgt 2160
aacgggcagc cactgcggac ggtggatgtg atggaatttg cgtga 2205

```

<210> 104

<211> 734

<212> PRT

<213> Unknown

<220>

<223> Obtained from an environmental sample.

<400> 104

```

Met Ser Glu Lys Lys Glu Ile Arg Val Ala Leu Ile Met Gly Gly Gly
1          5          10          15
Val Ser Leu Gly Ser Phe Ser Gly Gly Ala Leu Leu Lys Thr Ile Glu
20          25          30
Leu Leu Gln His Thr Ala Arg Gly Pro Ala Lys Ile Asp Val Val Thr
35          40          45
Gly Ala Ser Ala Gly Ser Met Thr Leu Gly Val Val Ile Tyr His Leu
50          55          60
Met Arg Gly Ser Ser Thr Asp Glu Ile Leu Arg Asp Leu Arg Arg Ser
65          70          75          80
Trp Val Glu Met Ile Ser Phe Asp Gly Leu Cys Pro Pro Asn Leu Ser
85          90          95
Arg His Asp Lys Pro Ser Leu Phe Ser Asp Glu Ile Val Arg Lys Ile
100          105          110
Ala Ala Thr Val Ile Asp Met Gly Arg Lys Leu Glu Ala Ala Pro His
115          120          125
Pro Leu Phe Ala Asp Glu Leu Val Ala Ser Phe Ala Leu Thr Asn Leu
130          135          140
Asn Gly Ile Pro Ala Arg Thr Glu Gly Gln Leu Ile Arg Gln Ala Lys
145          150          155          160
Gly Gly Gly Gly Ser Glu Lys Gly Ser Lys Ser Val Phe Ala Asp Ala
165          170          175
Val Gln Thr Thr Phe His His Asp Val Met Arg Phe Val Val Arg Arg
180          185          190
Asp His Asn Gly Gln Gly Ser Leu Phe Asp Ser Arg Tyr Arg Ala Arg
195          200          205
Ile Leu Pro Pro Trp Asn Val Gly Lys Gly Gly Asp Ala Trp Glu Ala
210          215          220
Phe Arg Thr Ala Ala Val Ala Ser Gly Ala Phe Pro Ala Ala Phe Pro
225          230          235          240
Pro Val Glu Ile Ser Arg Asn Arg Asp Glu Phe Asn Ile Trp Pro Asp
245          250          255
Arg Ile Glu Asp Gln Lys Ala Phe Thr Phe Asp Tyr Val Asp Gly Gly
260          265          270
Val Leu Arg Asn Glu Pro Leu Arg Glu Ala Ile His Leu Ala Ala Leu

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<211> 756
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<400> 105
 atgaaccggt gtcggaactc actcaacctc caacttcgcg cggtgaccgt ggcgggcggtg 60
 gtatgctgctg catcctcggc cgcgctggcg tgggacagcg cctcgcgcaa tccgacccat 120
 cccacccaca gctacctcac cgaatacgcc atcgatcagc ttgggggtggc gcggccggag 180
 ctccggcaat accgcaagca gatcatcgag ggcgccaaca ccgagctgca cgaactgcc 240
 gtcaagggga cggcctatgg cctcgacctc gacgccaagc ggcggggaaca ccgcggcacc 300
 aatgccggga cagacgacat cgcgggctgg tggcgggaaa gcctccaagc ctatcgcgcc 360
 ggtgccaagg aacgcgccta ctctgtgctg ggggtggtgc tgcacatggt cgaggacatg 420
 ggctgtgccg cgcacgcgaa cggcgtctac caccaggga acctgactga attcgacaat 480
 ttcgagttca tgggactgtc gaactggaag ccctctttcg ccgacatcaa ccggaccgat 540
 ccgggctacg ccgaccgctc gcgctactac gagttcagcc gagattggac ggcggcagac 600
 gcacccggct atcgcgaccg cgacagcttc tgaagacct gggttctcgc cagcccggcc 660
 gaacgtcagc tgcttcagaa ccgccagggc cggaccgcca cggtcgccat gtgggcgtta 720
 cggagcgcga cgaaggcggt cgcggggaaa ccctag 756

<210> 106
 <211> 251
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample.

<221> SIGNAL
 <222> (1)...(30)

<400> 106
 Met Asn Arg Cys Arg Asn Ser Leu Asn Leu Gln Leu Arg Ala Val Thr
 1 5 10 15
 Val Ala Ala Leu Val Val Val Ala Ser Ser Ala Ala Leu Ala Trp Asp
 20 25 30
 Ser Ala Ser Arg Asn Pro Thr His Pro Thr His Ser Tyr Leu Thr Glu
 35 40 45
 Tyr Ala Ile Asp Gln Leu Gly Val Ala Arg Pro Glu Leu Arg Gln Tyr
 50 55 60
 Arg Lys Gln Ile Ile Glu Gly Ala Asn Thr Glu Leu His Glu Leu Pro
 65 70 75 80
 Val Lys Gly Thr Ala Tyr Gly Leu Asp Leu Asp Ala Lys Arg Arg Glu
 85 90 95
 His Arg Gly Thr Asn Ala Gly Thr Asp Asp Ile Ala Gly Trp Trp Ala
 100 105 110
 Glu Ser Leu Gln Ala Tyr Arg Ala Gly Ala Lys Glu Arg Ala Tyr Phe
 115 120 125
 Val Leu Gly Val Val Leu His Met Val Glu Asp Met Gly Val Pro Ala
 130 135 140
 His Ala Asn Gly Val Tyr His Gln Gly Asn Leu Thr Glu Phe Asp Asn
 145 150 155 160
 Phe Glu Phe Met Gly Leu Ser Asn Trp Lys Pro Ser Phe Ala Asp Ile
 165 170 175
 Asn Arg Thr Asp Pro Gly Tyr Ala Asp Pro Ser Arg Tyr Tyr Glu Phe
 180 185 190
 Ser Arg Asp Trp Thr Ala Ala Asp Ala Pro Gly Tyr Arg Asp Arg Asp

50		55		60	
Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met					
65		70		75	80
Thr Gln Glu Tyr Asn Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile					
	85		90		95
Phe Asp Ile Arg Gly Arg Leu Thr Asp Asp Asn Thr Ile Val Leu His					
	100		105		110
His Gly Pro Leu Tyr Leu Tyr Val Thr Leu His Glu Phe Ile Asn Glu					
	115		120		125
Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser					
	130		135		140
Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Asp Ser Phe Ser					
	145		150		155
Ser Thr Phe Glu Lys Lys Tyr Phe Pro Asp Pro Ile Phe Leu Lys Thr					
	165		170		175
Glu Gly Asn Ile Arg Leu Gly Asp Ala Arg Gly Lys Ile Val Leu Leu					
	180		185		190
Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr					
	195		200		205
Trp Pro Asp Asn Asp Thr Phe Thr Thr Thr Val Asn Gln Asn Val Asn					
	210		215		220
Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Val Thr					
	225		230		235
Ser Ile Lys Asp Thr Ile Asn Glu Thr Ile Asn Asn Ser Glu Asp Cys					
	245		250		255
Asn His Leu Tyr Ile Asn Phe Thr Ser Leu Ser Ser Gly Gly Thr Ala					
	260		265		270
Trp Asn Ser Pro Tyr Tyr Tyr Ala Ser Tyr Ile Asn Pro Glu Ile Ala					
	275		280		285
Asn Tyr Met Lys Gln Lys Asn Pro Thr Arg Val Gly Trp Val Ile Gln					
	290		295		300
Asp Tyr Ile Asn Glu Lys Trp Ser Pro Ile Leu Tyr Glu Glu Val Ile					
	305		310		315
Arg Ala Asn Lys Ser Leu Val Lys Glu					320
					325

<210> 109
 <211> 990
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 109

atgagcaata	agaagtttat	tttgaaat	ttcatatgta	gtactatact	tagcacattt	60
gtatttgctt	tcaatgataa	gcaagcagtt	gctgctagcg	ctggtaatgg	gcttgaaaac	120
tggtcaaaat	ggatgcaacc	tatacccgat	aacgtaccgt	tagcacgaat	ttcaattcca	180
ggaacacatg	atagtggaac	gttcaagttg	caaaatccga	taaagcaagt	atggggaatg	240
acgcaagaat	ataattttcg	ttaccaaagt	gatcacggag	ctagaatttt	tgatattaga	300
gggcgtttaa	cagatgataa	tacgatagtt	cttcacatg	ggccattata	tctttatgta	360
acattgcatg	aatttataaa	tgaagcgaaa	caatttttaa	aagataatcc	aagtgaacg	420
attattatgt	ctttaaaaaa	agagtatgag	gatatgaaag	gggcagaaga	ttcatttagt	480
agtagctttg	aaaaaaaaa	ttttcctgat	cctatctttt	taaaaacaga	agggaatata	540
agacttggag	atgctcgagg	aaaaattgtg	ctactaaaaa	gatacagtg	tagtaatgaa	600
tctggaggat	ataataattt	ttattggcca	gataatgaga	cgtttacgac	aactgtaaat	660
caaaatgtaa	atgtaacagt	acaagataaa	tataaagtga	gttatgatga	gaaagtaaaa	720
tctattaaag	atacgataaa	tgaaacgatt	aacaacagtg	aagattgtaa	tcattctatat	780
attaatttta	caagcttgct	ttctggtggt	acagcatgga	atagtcata	ttattatg	840

tcctacataa atcctgaaat tgcaaactat atgaagcaaa agaatcctat gagagtgggc	900
tggttaattc aagattatat aaatgaaaaa tgggtcccaa tactttatga agaagttata	960
agagcgaata agtcacttgt aaaagagtaa	990

<210> 110
 <211> 329
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(23)

<221> DOMAIN
 <222> (56)...(195)

<400> 110

Met	Ser	Asn	Lys	Lys	Phe	Ile	Leu	Lys	Leu	Phe	Ile	Cys	Ser	Thr	Ile
1				5					10					15	
Leu	Ser	Thr	Phe	Val	Phe	Ala	Phe	Asn	Asp	Lys	Gln	Ala	Val	Ala	Ala
			20					25					30		
Ser	Ala	Gly	Asn	Gly	Leu	Glu	Asn	Trp	Ser	Lys	Trp	Met	Gln	Pro	Ile
		35					40					45			
Pro	Asp	Asn	Val	Pro	Leu	Ala	Arg	Ile	Ser	Ile	Pro	Gly	Thr	His	Asp
	50					55					60				
Ser	Gly	Thr	Phe	Lys	Leu	Gln	Asn	Pro	Ile	Lys	Gln	Val	Trp	Gly	Met
65					70					75					80
Thr	Gln	Glu	Tyr	Asn	Phe	Arg	Tyr	Gln	Met	Asp	His	Gly	Ala	Arg	Ile
			85					90						95	
Phe	Asp	Ile	Arg	Gly	Arg	Leu	Thr	Asp	Asp	Asn	Thr	Ile	Val	Leu	His
			100					105					110		
His	Gly	Pro	Leu	Tyr	Leu	Tyr	Val	Thr	Leu	His	Glu	Phe	Ile	Asn	Glu
		115					120					125			
Ala	Lys	Gln	Phe	Leu	Lys	Asp	Asn	Pro	Ser	Glu	Thr	Ile	Ile	Met	Ser
	130					135					140				
Leu	Lys	Lys	Glu	Tyr	Glu	Asp	Met	Lys	Gly	Ala	Glu	Asp	Ser	Phe	Ser
145					150					155					160
Ser	Thr	Phe	Glu	Lys	Tyr	Phe	Pro	Asp	Pro	Ile	Phe	Leu	Lys	Thr	
			165					170					175		
Glu	Gly	Asn	Ile	Arg	Leu	Gly	Asp	Ala	Arg	Gly	Lys	Ile	Val	Leu	Leu
		180						185					190		
Lys	Arg	Tyr	Ser	Gly	Ser	Asn	Glu	Ser	Gly	Gly	Tyr	Asn	Asn	Phe	Tyr
		195				200						205			
Trp	Pro	Asp	Asn	Glu	Thr	Phe	Thr	Thr	Thr	Val	Asn	Gln	Asn	Val	Asn
	210					215					220				
Val	Thr	Val	Gln	Asp	Lys	Tyr	Lys	Val	Ser	Tyr	Asp	Glu	Lys	Val	Lys
225					230					235					240
Ser	Ile	Lys	Asp	Thr	Ile	Asn	Glu	Thr	Ile	Asn	Asn	Ser	Glu	Asp	Cys
			245						250					255	
Asn	His	Leu	Tyr	Ile	Asn	Phe	Thr	Ser	Leu	Ser	Ser	Gly	Gly	Thr	Ala
		260						265					270		
Trp	Asn	Ser	Pro	Tyr	Tyr	Tyr	Ala	Ser	Tyr	Ile	Asn	Pro	Glu	Ile	Ala
		275					280					285			
Asn	Tyr	Met	Lys	Gln	Lys	Asn	Pro	Met	Arg	Val	Gly	Trp	Val	Ile	Gln
	290					295					300				
Asp	Tyr	Ile	Asn	Glu	Lys	Trp	Ser	Pro	Ile	Leu	Tyr	Glu	Glu	Val	Ile
305					310					315					320

Arg Ala Asn Lys Ser Leu Val Lys Glu
325

<210> 111
<211> 828
<212> DNA
<213> Bacteria

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<400> 111
gtgggtgccg gggcgatcct tctcaccggg gccccaccg cctcggccgt ggacacgcgc      60
gcgtggatgg ggggacacgg ggacggcacg ccgctccagc ggctcaccat ccccggcacc      120
cacgactccg gcgcccgggt cggcggggccc tggtcggagt gccagaacac caccatcgcc      180
cagcagctgg acagcgggat ccggttcctg gacgtccggt gccgggtcac cggcgggtcc      240
ttcgccatcc accacggggc ctccctaccag aacatgatgt tcggcgacgt cctcgtcgcc      300
tgccgcgact tcctcgccgc gcacccctcc gagaccgtcc tcatgcgggt caagcaggag      360
tactcgaccg actccgacgc caccttcggg gccgtcttcg acgactacct cgacgcgcgc      420
ggctggeget ccctgttccg catcggcgac ggggtcccgc tgctcggcga ggcccgcggc      480
cgggtcgtgc tcatcgccga caacggcgga ctgcggggcg gtctgcgctg gggcgacggc      540
tcggccctcg ccatccagga cgactggaac gcgctgcccg accccaagta cgccaagatc      600
gaggcgcact tccgtaccgc cgtcgcccag ccgggcccgc tgtacgtgaa ctctgtcagc      660
acctcgcctt acctgccgcc ccgctggaac tccgacaacc tcaaccgcgc cgtgcaccgc      720
tacctcgaca gcgcggccgc cgcgggcgcg aagggcctcg ggatcgtecc catggacttc      780
cccaacaccc gctcgggtct ggtcgaggcg ctgctccggc acaactga      828
```

<210> 112
<211> 275
<212> PRT
<213> Bacteria

<220>
<221> SIGNAL
<222> (1)...(16)

<221> DOMAIN
<222> (34)...(168)
<223> Phosphatidylinositol-specific phospholipase C, X
domain

```
<400> 112
Met Gly Ala Gly Ala Ile Leu Leu Thr Gly Ala Pro Thr Ala Ser Ala
1      5      10      15
Val Asp Thr Arg Ala Trp Met Gly Gly His Gly Asp Gly Thr Pro Leu
20     25     30
Gln Arg Leu Thr Ile Pro Gly Thr His Asp Ser Gly Ala Arg Phe Gly
35     40     45
Gly Pro Trp Ser Glu Cys Gln Asn Thr Thr Ile Ala Gln Gln Leu Asp
50     55     60
Ser Gly Ile Arg Phe Leu Asp Val Arg Cys Arg Val Thr Gly Gly Ser
65     70     75     80
Phe Ala Ile His His Gly Ala Ser Tyr Gln Asn Met Met Phe Gly Asp
85     90     95
Val Leu Val Ala Cys Arg Asp Phe Leu Ala Ala His Pro Ser Glu Thr
100    105    110
Val Leu Met Arg Val Lys Gln Glu Tyr Ser Thr Asp Ser Asp Ala Thr
115    120    125
Phe Arg Ala Val Phe Asp Asp Tyr Leu Asp Ala Arg Gly Trp Arg Ser
130    135    140
Leu Phe Arg Ile Gly Asp Gly Val Pro Leu Leu Gly Glu Ala Arg Gly
145    150    155    160
```

Arg Val Val Leu Ile Ala Asp Asn Gly Gly Leu Pro Gly Gly Leu Arg
 165 170 175
 Trp Gly Asp Gly Ser Ala Leu Ala Ile Gln Asp Asp Trp Asn Ala Leu
 180 185 190
 Pro Asp Pro Lys Tyr Ala Lys Ile Glu Ala His Phe Arg Thr Ala Val
 195 200 205
 Ala Gln Pro Gly Arg Leu Tyr Val Asn Phe Val Ser Thr Ser Ala Tyr
 210 215 220
 Leu Pro Pro Arg Trp Asn Ser Asp Asn Leu Asn Pro Arg Val His Arg
 225 230 235 240
 Tyr Leu Asp Ser Ala Ala Ala Ala Gly Ala Lys Gly Leu Gly Ile Val
 245 250 255
 Pro Met Asp Phe Pro Asn Thr Arg Ser Gly Leu Val Glu Ala Leu Leu
 260 265 270
 Arg His Asn
 275

<210> 113
 <211> 981
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 113
 atgagcaata agaagtttat tttgaaatta ttcatatgta gtactatact tagcacattt 60
 gtatttgctt tcaatgataa gcaagcagtt gctgctagcg ctggtaatgg gcttgaaaac 120
 tggtcaaaat ggatgcaacc tatacccgat aacgtaccgt tagcacgaat ttcaattcca 180
 ggaacacatg atagtggaac gttcaagttg caaaatccga taaagcaagt atggggaatg 240
 acgcaagaat ataattttcg ttaccaaagt gatcacggag ctagaatttt tgatattaga 300
 gggcgtttaa cagatgataa tacgatagtt cttcatcatg ggccattata tctttatgta 360
 acattgcatg aattttataaa tgaagcgaaa caatttttaa aagataatcc aagtgaaacg 420
 attattatgt ctttaaaaaa agagtatgag gatatgaaag gggcagaaga ttcatttagt 480
 agtacgtttg aaaaaaaata ttttcctgat cctatctttt taaaaacaga aggggaatata 540
 agacttgagg atgctcgagg aaaaattgtg ctactaaaaa gatacagtgg tagtaatgaa 600
 tctggaggat ataataattt ttattggcca gataatgaga cgtttacgac aactgtaaat 660
 caaatgtaa atgtaacagt acaagataaa tataaagtga gttatgatga gaaagtaaaa 720
 tctattaaag atacgataaa tgaaacgatt aacaacagtg aagattgtaa tcatctatat 780
 attaatTTTA caagcttgtc ttctgggtgg acagcatgga atagtccata ttattatgcg 840
 tcctacataa atcctgaaat tgcaaaactat atgaagcaaa agaatcctat gagagtgggc 900
 tgggtaattc aagattatat aaatgaaaaa tgggtcccaa tactttatga agaagttata 960
 agagcgaata agtcactgta a 981

<210> 114
 <211> 326
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(23)

<221> DOMAIN
 <222> (56)...(195)
 <223> Phosphatidylinositol-specific phospholipase C, X
 domain

<400> 114

```

Met Ser Asn Lys Lys Phe Ile Leu Lys Leu Phe Ile Cys Ser Thr Ile
 1          5          10          15
Leu Ser Thr Phe Val Phe Ala Phe Asn Asp Lys Gln Ala Val Ala Ala
 20          25          30
Ser Ala Gly Asn Gly Leu Glu Asn Trp Ser Lys Trp Met Gln Pro Ile
 35          40          45
Pro Asp Asn Val Pro Leu Ala Arg Ile Ser Ile Pro Gly Thr His Asp
 50          55          60
Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met
 65          70          75          80
Thr Gln Glu Tyr Asn Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile
 85          90          95
Phe Asp Ile Arg Gly Arg Leu Thr Asp Asn Thr Ile Val Leu His
100          105          110
His Gly Pro Leu Tyr Leu Tyr Val Thr Leu His Glu Phe Ile Asn Glu
115          120          125
Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser
130          135          140
Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Asp Ser Phe Ser
145          150          155          160
Ser Thr Phe Glu Lys Lys Tyr Phe Pro Asp Pro Ile Phe Leu Lys Thr
165          170          175
Glu Gly Asn Ile Arg Leu Gly Asp Ala Arg Gly Lys Ile Val Leu Leu
180          185          190
Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr
195          200          205
Trp Pro Asp Asn Glu Thr Phe Thr Thr Thr Val Asn Gln Asn Val Asn
210          215          220
Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Val Lys
225          230          235          240
Ser Ile Lys Asp Thr Ile Asn Glu Thr Ile Asn Asn Ser Glu Asp Cys
245          250          255
Asn His Leu Tyr Ile Asn Phe Thr Ser Leu Ser Ser Gly Gly Thr Ala
260          265          270
Trp Asn Ser Pro Tyr Tyr Tyr Ala Ser Tyr Ile Asn Pro Glu Ile Ala
275          280          285
Asn Tyr Met Lys Gln Lys Asn Pro Met Arg Val Gly Trp Val Ile Gln
290          295          300
Asp Tyr Ile Asn Glu Lys Trp Ser Pro Ile Leu Tyr Glu Glu Val Ile
305          310          315          320
Arg Ala Asn Lys Ser Leu
          325

```

<210> 115

<211> 987

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample

<400> 115

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atgaacaata agaagtttat tttgaagtta ttcatatgta gtatggtact tagcgctttt      60
gtatttgctt tcaatgataa gaaaaccgtt gcagctagct ctattaatga gcttgaaaat      120
tggtctagat ggatgaaacc tataaatgat gacataccgt tagcacgaat ttcaattcca      180
ggaacacatg atagtgaac gttcaagttg caaaatccga taaagcaagt gtggggaatg      240
acgcaagaat atgattttcg ttatcaaatg gatcatggag ctagaatttt tgatataaga      300

```

```

gggcgttttaa cagatgataa tacgatagtt cttcatcatg ggccattata tctttatgta 360
acactgcacg aatttataaa cgaagcgaaa caatttttaa aagataatcc aagtgaaacg 420
attattatgt ctttaaaaaa agagtatgag gatatgaaag gggcggaaag ctcatttagt 480
agtacgtttg agaaaaatta ttttcgtgat ccaatctttt taaaaacaga aggggaatata 540
aagcttggag atgctcgtgg gaaaattata ttactaaaac gatatagtgg tagtaatgaa 600
tctgggggat ataataattt ctattggcca gacaatgaga cgtttacctc aactataaat 660
caaaatgtaa atgtcacagt acaagataaa tataaagtga gttatgatga gaaagtaaac 720
gctattaaag atacattaaa tgaaacgatt aacaatagtg aagatgttaa tcatctatat 780
attaatttta taagcttgtc ttctgggtgg acagcatgga atagtccata ttattatgcg 840
tcctacataa atcctgaaat tgcaaattat atgaagcaaa agaatcctac gagagtgggc 900
tggaataaac aagattatat aaatgaaaaa tggtcaccat tactttatca agaagttata 960
agagcgaata agtcacttgt aaaatag 987

```

<210> 116
 <211> 328
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(23)

<221> DOMAIN
 <222> (56)...(195)
 <223> Phosphatidylinositol-specific phospholipase C, X
 domain

```

<400> 116
Met Asn Asn Lys Lys Phe Ile Leu Lys Leu Phe Ile Cys Ser Met Val
1      5      10      15
Leu Ser Ala Phe Val Phe Ala Phe Asn Asp Lys Lys Thr Val Ala Ala
20     25     30
Ser Ser Ile Asn Glu Leu Glu Asn Trp Ser Arg Trp Met Lys Pro Ile
35     40     45
Asn Asp Asp Ile Pro Leu Ala Arg Ile Ser Ile Pro Gly Thr His Asp
50     55     60
Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met
65     70     75     80
Thr Gln Glu Tyr Asp Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile
85     90     95
Phe Asp Ile Arg Gly Arg Leu Thr Asp Asn Thr Ile Val Leu His
100    105    110
His Gly Pro Leu Tyr Leu Tyr Val Thr Leu His Glu Phe Ile Asn Glu
115    120    125
Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser
130    135    140
Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Ser Ser Phe Ser
145    150    155    160
Ser Thr Phe Glu Lys Asn Tyr Phe Arg Asp Pro Ile Phe Leu Lys Thr
165    170    175
Glu Gly Asn Ile Lys Leu Gly Asp Ala Arg Gly Lys Ile Ile Leu Leu
180    185    190
Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr
195    200    205
Trp Pro Asp Asn Glu Thr Phe Thr Ser Thr Ile Asn Gln Asn Val Asn
210    215    220
Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Val Asn

```


225		230		235		240									
Ala	Ile	Lys	Asp	Thr	Leu	Asn	Glu	Thr	Ile	Asn	Asn	Ser	Glu	Asp	Val
		245		250		255									
Asn	His	Leu	Tyr	Ile	Asn	Phe	Ile	Ser	Leu	Ser	Ser	Gly	Gly	Thr	Ala
		260		265		270									
Trp	Asn	Ser	Pro	Tyr	Tyr	Tyr	Ala	Ser	Tyr	Ile	Asn	Pro	Glu	Ile	Ala
		275		280		285									
Asn	Tyr	Met	Lys	Gln	Lys	Asn	Pro	Thr	Arg	Val	Gly	Trp	Ile	Ile	Gln
		290		295		300									
Asp	Tyr	Ile	Asn	Glu	Lys	Trp	Ser	Pro	Leu	Leu	Tyr	Gln	Glu	Val	Ile
305				310		315									320
Arg	Ala	Asn	Lys	Ser	Leu	Val	Lys								
				325											

<210> 117
 <211> 987
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 117	
atgaacaata	agaagtttat
gtatattgctt	tcaatgataa
tggtctagat	ggatgaaacc
ggaacacatg	atagtggaaac
acgcaagaat	atgattttcgc
gggcgttttaa	cagatgataa
acactgcacg	aattttataaa
attattatgt	ctttaaaaaa
agtacgtttg	agaaaaatta
aagcttggag	atgctcgtgg
tctgggggat	ataataattt
caaaatgtaa	atgtaacagt
gctattaaag	atacattaaa
attaatttta	caagcttgtc
tcctacataa	atcctgaaat
tggaataac	aagattatat
agagcgaata	agtcacttgt
	aaaatag
	60
	120
	180
	240
	300
	360
	420
	480
	540
	600
	660
	720
	780
	840
	900
	960
	987

<210> 118
 <211> 328
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(23)
 <221> DOMAIN
 <222> (56)...(195)
 <223> Phosphatidylinositol-specific phospholipase C, X domain

<400> 118
 Met Asn Asn Lys Lys Phe Ile Leu Lys Leu Phe Ile Cys Ser Met Val

1	5	10	15
Leu Ser Ala Phe Val Phe Ala Phe Asn Asp Lys Lys Thr Val Ala Ala			
	20	25	30
Ser Ser Ile Asn Glu Leu Glu Asn Trp Ser Arg Trp Met Lys Pro Ile			
	35	40	45
Asn Asp Asp Ile Pro Leu Ala Arg Ile Ser Ile Pro Gly Thr His Asp			
	50	55	60
Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met			
65	70	75	80
Thr Gln Glu Tyr Asp Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile			
	85	90	95
Phe Asp Ile Arg Gly Arg Leu Thr Asp Asp Asn Thr Ile Val Leu His			
	100	105	110
His Gly Pro Leu Tyr Leu Tyr Val Thr Leu His Glu Phe Ile Asn Glu			
	115	120	125
Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser			
	130	135	140
Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Ser Ser Phe Ser			
145	150	155	160
Ser Thr Phe Glu Lys Asn Tyr Phe Arg Asp Pro Ile Phe Leu Lys Thr			
	165	170	175
Glu Gly Asn Ile Lys Leu Gly Asp Ala Arg Gly Lys Ile Val Leu Leu			
	180	185	190
Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr			
	195	200	205
Trp Pro Asp Asn Glu Thr Phe Thr Ser Thr Ile Asn Gln Asn Val Asn			
	210	215	220
Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Ile Asn			
225	230	235	240
Ala Ile Lys Asp Thr Leu Asn Glu Thr Ile Asn Asn Ser Glu Asp Val			
	245	250	255
Asn His Leu Tyr Ile Asn Phe Thr Ser Leu Ser Ser Gly Gly Thr Ala			
	260	265	270
Trp Asn Ser Pro Tyr Tyr Tyr Ala Ser Tyr Ile Asn Pro Glu Ile Ala			
	275	280	285
Asn Tyr Met Lys Gln Lys Asn Pro Thr Arg Val Gly Trp Ile Ile Gln			
	290	295	300
Asp Tyr Ile Asn Glu Lys Trp Ser Pro Leu Leu Tyr Gln Glu Val Ile			
305	310	315	320
Arg Ala Asn Lys Ser Leu Val Lys			
	325		

<210> 119

<211> 987

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample

<400> 119

atgaacaata	agaagtttat	tttgaagtta	ttcatatgta	gtatgggtact	tagcgccttt	60
gtatttgctt	tcaatgataa	gaaaaccgtt	gcagctagct	ctattaatgt	gcttgaaaat	120
tggtctagat	ggatgaaacc	tataaatgat	gacataccgt	tagcacgaat	ttcaattcca	180
ggaacacatg	atagtggaac	gttcaagttg	caaaatccga	taaagcaagt	gtgggggaatg	240
acgcaagaat	atgattttcg	ttatcaaatg	gatcatggag	ctagaatttt	tgatataaga	300
gggcgtttta	cagatgataa	tacgatagtt	cttcatcatg	ggccattata	tctttatgta	360
acactgcacg	aattttataaa	cgaagcgaaa	caatttttaa	aagataatcc	aagtgaaacg	420
attattatgt	ctttaaaaaa	agagtatgag	gatatgaaag	gggcggaaaag	ctcatttagt	480

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agtacgtttg agaaaaatta ttttcgtgat ccaatctttt taaaaacaga agggaatata 540
aagcttggag atgctcgtgg gaaaattgta ttactaaaaa gatatagtgg tagtaatgaa 600
tctgggggat ataataattt ctattggcca gacaatgaga cgtttacctc aactataaat 660
caaaatgtaa atgtaacagt acaagataaa tataaagtga gttatgatga gaaaataaac 720
gctattaaag atacattaaa tgaaacgatt aacaatagtg aagatgttaa tcatctatat 780
attaatttta caagcttgtc ttctggtggt acagcatgga atagtccata ttattatgcg 840
tcctacataa atcctgaaat tgcaaattat atgaagcaaa agaatcctac gagagtgggc 900
tggataatac aagattatat aaatgaaaaa tggtcaccat tactttatca agaagttata 960
agagcgaata agtcacttgt aaaatag 987

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<210> 120
<211> 328
<212> PRT
<213> Unknown

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<220>
<223> Obtained from an environmental sample

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```

<221> SIGNAL
<222> (1)...(23)

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```

<221> DOMAIN
<222> (56)...(195)
<223> Phosphatidylinositol-specific phospholipase C, X
      domain

```

```

<400> 120
Met Asn Asn Lys Lys Phe Ile Leu Lys Leu Phe Ile Cys Ser Met Val
 1          5          10          15
Leu Ser Ala Phe Val Phe Ala Phe Asn Asp Lys Lys Thr Val Ala Ala
 20          25          30
Ser Ser Ile Asn Val Leu Glu Asn Trp Ser Arg Trp Met Lys Pro Ile
 35          40          45
Asn Asp Asp Ile Pro Leu Ala Arg Ile Ser Ile Pro Gly Thr His Asp
 50          55          60
Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met
 65          70          75          80
Thr Gln Glu Tyr Asp Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile
 85          90          95
Phe Asp Ile Arg Gly Arg Leu Thr Asp Asn Thr Ile Val Leu His
100          105          110
His Gly Pro Leu Tyr Leu Tyr Val Thr Leu His Glu Phe Ile Asn Glu
115          120          125
Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser
130          135          140
Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Ser Ser Phe Ser
145          150          155          160
Ser Thr Phe Glu Lys Asn Tyr Phe Arg Asp Pro Ile Phe Leu Lys Thr
165          170          175
Glu Gly Asn Ile Lys Leu Gly Asp Ala Arg Gly Lys Ile Val Leu Leu
180          185          190
Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr
195          200          205
Trp Pro Asp Asn Glu Thr Phe Thr Ser Thr Ile Asn Gln Asn Val Asn
210          215          220
Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Ile Asn
225          230          235          240
Ala Ile Lys Asp Thr Leu Asn Glu Thr Ile Asn Asn Ser Glu Asp Val
245          250          255

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Ser Ser Ile Asn Glu Leu Glu Asn Trp Ser Arg Trp Met Gln Pro Ile
 35 40 45
 Pro Asp Asp Met Pro Leu Ala Arg Ile Ser Ile Pro Gly Thr His Asp
 50 55 60
 Ser Gly Thr Phe Lys Leu Gln Asn Pro Ile Lys Gln Val Trp Gly Met
 65 70 75 80
 Thr Gln Glu Tyr Asp Phe Arg Tyr Gln Met Asp His Gly Ala Arg Ile
 85 90 95
 Phe Asp Ile Arg Gly Arg Leu Thr Asp Asn Thr Ile Val Leu His
 100 105 110
 His Gly Pro Leu Tyr Leu Tyr Val Thr Leu Asn Glu Phe Ile Asn Glu
 115 120 125
 Ala Lys Gln Phe Leu Lys Asp Asn Pro Ser Glu Thr Ile Ile Met Ser
 130 135 140
 Leu Lys Lys Glu Tyr Glu Asp Met Lys Gly Ala Glu Asn Ser Phe Ser
 145 150 155 160
 Ser Thr Phe Glu Lys Lys Tyr Phe Leu Asp Pro Ile Phe Leu Lys Thr
 165 170 175
 Glu Gly Asn Ile Lys Leu Gly Asp Ala Arg Gly Lys Ile Val Leu Leu
 180 185 190
 Lys Arg Tyr Ser Gly Ser Asn Glu Ser Gly Gly Tyr Asn Asn Phe Tyr
 195 200 205
 Trp Pro Asp Asn Glu Thr Phe Thr Thr Thr Val Asn Gln Asn Val Asn
 210 215 220
 Val Thr Val Gln Asp Lys Tyr Lys Val Ser Tyr Asp Glu Lys Val Lys
 225 230 235 240
 Ser Ile Lys Asp Thr Ile Asn Glu Thr Ile Asn Asn Ser Glu Asp Phe
 245 250 255
 Asn His Leu Tyr Ile Asn Phe Thr Ser Leu Ser Ser Gly Gly Thr Ala
 260 265 270
 Trp Asn Ser Pro Tyr Tyr Tyr Ala Ser Tyr Ile Asn Pro Glu Ile Ala
 275 280 285
 Asn His Met Lys Gln Lys Asn Pro Thr Arg Val Gly Trp Val Ile Gln
 290 295 300
 Asp Tyr Ile Asn Glu Lys Trp Ser Pro Ile Leu Tyr Gln Glu Val Ile
 305 310 315 320
 Arg Ala Asn Lys Ser Leu Ile Lys Glu
 325

<210> 123

<211> 849

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample

<400> 123

atgaaaaaga	aagtattagc	actagcagct	atggttgctt	tagctgcacc	agttcaaagt	60
gtagtgtttg	cgcaaacaaa	taatagtga	agtcctgcac	cgatcctaag	atggtcagct	120
gaggacaagc	ataatgaggg	agttagtact	catttggtgga	ttgtaaatcg	tgcaattgac	180
atcatgtctc	gtaatacagc	gattgtgaag	ccaaatgaaa	ctgctttatt	aaatgagtgg	240
cgtactgatt	tagaaaatgg	tattttattct	gctgattacg	agaatcctta	ttatgataat	300
agtacatatg	cttctcattt	ttacgatccg	gatactggaa	aaacatatat	tccttttgcg	360
aaacaggcaa	aagaaacagg	tacaaaatat	tttaaacttg	ctggtgaagc	atacaaaaat	420
caagatatga	aacaggcatt	cttctatttta	ggattatcac	ttcattattt	aggagatgta	480
aatcagccaa	tgcatgcagc	aaacttttacg	aatctttctt	atccaatggg	tttccattct	540
aaatatgaaa	atthttgttg	tacaataaaa	aataactata	tagtttcaga	tagtagtgga	600
tattggaatt	ggaaaggggc	aaaccagaa	gattggattc	aaggagcagc	agtagcggct	660

aaacaagatt atcctggtat tgtgaacgat acgacaaaag attgggtttgt aaaagcagct	720
gtatctcaag catatgcaga taaatggcgt gcagaagtaa caccggtgac aggaaaacgc	780
ttaatggagg cacagcgcgt tacagctggt tatattcatt tatgggtttga tacgtatgta	840
aatcactaa	849

<210> 124
 <211> 282
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(24)

<221> DOMAIN
 <222> (1)...(281)
 <223> Zinc dependent phospholipase C

<400> 124

Met	Lys	Lys	Lys	Val	Leu	Ala	Leu	Ala	Ala	Met	Val	Ala	Leu	Ala	Ala
1				5					10					15	
Pro	Val	Gln	Ser	Val	Val	Phe	Ala	Gln	Thr	Asn	Asn	Ser	Glu	Ser	Pro
			20					25					30		
Ala	Pro	Ile	Leu	Arg	Trp	Ser	Ala	Glu	Asp	Lys	His	Asn	Glu	Gly	Val
		35					40					45			
Ser	Thr	His	Leu	Trp	Ile	Val	Asn	Arg	Ala	Ile	Asp	Ile	Met	Ser	Arg
	50					55					60				
Asn	Thr	Ala	Ile	Val	Lys	Pro	Asn	Glu	Thr	Ala	Leu	Leu	Asn	Glu	Trp
65				70					75					80	
Arg	Thr	Asp	Leu	Glu	Asn	Gly	Ile	Tyr	Ser	Ala	Asp	Tyr	Glu	Asn	Pro
			85					90					95		
Tyr	Tyr	Asp	Asn	Ser	Thr	Tyr	Ala	Ser	His	Phe	Tyr	Asp	Pro	Asp	Thr
			100					105					110		
Gly	Lys	Thr	Tyr	Ile	Pro	Phe	Ala	Lys	Gln	Ala	Lys	Glu	Thr	Gly	Thr
		115					120					125			
Lys	Tyr	Phe	Lys	Leu	Ala	Gly	Glu	Ala	Tyr	Lys	Asn	Gln	Asp	Met	Lys
		130				135					140				
Gln	Ala	Phe	Phe	Tyr	Leu	Gly	Leu	Ser	Leu	His	Tyr	Leu	Gly	Asp	Val
145					150					155				160	
Asn	Gln	Pro	Met	His	Ala	Ala	Asn	Phe	Thr	Asn	Leu	Ser	Tyr	Pro	Met
			165					170						175	
Gly	Phe	His	Ser	Lys	Tyr	Glu	Asn	Phe	Val	Asp	Thr	Ile	Lys	Asn	Asn
			180					185					190		
Tyr	Ile	Val	Ser	Asp	Ser	Ser	Gly	Tyr	Trp	Asn	Trp	Lys	Gly	Ala	Asn
		195					200					205			
Pro	Glu	Asp	Trp	Ile	Gln	Gly	Ala	Ala	Val	Ala	Ala	Lys	Gln	Asp	Tyr
		210				215						220			
Pro	Gly	Ile	Val	Asn	Asp	Thr	Thr	Lys	Asp	Trp	Phe	Val	Lys	Ala	Ala
225				230						235				240	
Val	Ser	Gln	Ala	Tyr	Ala	Asp	Lys	Trp	Arg	Ala	Glu	Val	Thr	Pro	Val
			245					250						255	
Thr	Gly	Lys	Arg	Leu	Met	Glu	Ala	Gln	Arg	Val	Thr	Ala	Gly	Tyr	Ile
			260					265					270		
His	Leu	Trp	Phe	Asp	Thr	Tyr	Val	Asn	His						
		275					280								

<210> 125

<211> 1710
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 125
 atggctgaca acgagttgcc cctggcgcgg cccagggaga cgccgcgctg ccgccccggc 60
 acgttcgagc ttgggctcgc cctggctggc gcgggtctctg gcggcgcccta cgccgcggga 120
 gtccctggatt tcttctacga agccctcgag catttggtacg aggccaggga ggcgggagcg 180
 ccggtgcccc accacgacgt gtcctcccg atcatctcgg gtgcgtcggc gggcagtatc 240
 aatggcgctgc tttcggggcat cgcgctgccc taccgttttc cccacgtgca cagcggggccc 300
 gcgcccagag gtgccacggg caaccccttc tacgacgcct ggggtgaagcg catcgacgtg 360
 cgcgaaactgt tgggcaacga agacctggcc gatcccacgc agccggtggc atccctgctc 420
 gacgccacct gcctggatac gatcgcgaa gacatgctcg gcttctcggc ggcgcggggc 480
 acccgcccg acgtcgctaa tccgctgaaa tgcgtgttca cggtgaccaa cctgcgtggc 540
 gttcccttacg tcgtgcagtt caagggaaac ccggagatcc ccggccacgg catgatggcc 600
 cacgccgact ggctgcgctt cgccgtcgac accgggcagg gcgaccggga tggggaatgg 660
 atgttccccg atgaacggct cgtcagcggg ccgagccatg cgcggactcc ggctggcaa 720
 ggtttcatgg aggcggcgct cgcttcgctg gcgttcccg ccggttgctg tttccgcgaa 780
 gtcgcccggc cctggagcga ttacgaccag cgcgtcgtgg tggtgcccaa ccaggcgggg 840
 gccgcggtcc cggctccgct cccgcgggce tgggcggagg gcgagggcag cgatggggac 900
 taccggttcg tcgcggtgga tgggtggcgg atggacaacg agccgttcga acttgcccgt 960
 accgagctgg cgggcacgct cgcccgcaat ccacgcgaag ggaaccgggt caaccgcatc 1020
 gtgatcatgc tcgatccgtt tcccagggcc gaggcgcggg gaccgcggga agccgcgagc 1080
 acgaatctcg tcgaggcgat ggcctcgctg tttggtgctg ggaaacagca ggcacggttc 1140
 aagccggagg aagtggcgct cgccctggat tcgaccgtgt acagccgctt catgatcgcg 1200
 cccagccggc cgtgcatgga gggcgggcca cgggtggatc gtgggcgagc gctcgccgcg 1260
 ggtgcgctgg gtggtttctc ggggttcctg gcggaggcat acaggcacca cgatttcctc 1320
 ctgggacgcc gcaactgcc aacgttcttc gccgagcgcc tgttgatccc cgcggacaat 1380
 ccgatcttcg ccggctggat cgacgatccc tccctgcagg gctacatccg cgagatcgat 1440
 ggctgcgctt acgcccgggt catcccgtcg gtgggcgggt gccagggctt gcgcgagccg 1500
 ttgccacgt ggccgcgtgg tgcattcgac ctggactcgc tcatgccgct ggtcgagcgc 1560
 cgcatgcagc ccctgtattc ggcggtacc gcgacgctcg gtggccgctt cgccacctgg 1620
 ctggcggtggc gcttctacct gcgcgcgaag ctccctgacc tgggtctcaag ccgtatccgt 1680
 agcgcatgga gggacttcgg cctttggtga 1710

<210> 126
 <211> 569
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 126
 Met Ala Asp Asn Glu Leu Pro Leu Ala Arg Pro Arg Glu Thr Pro Pro
 1 5 10 15
 Cys Arg Pro Gly Thr Phe Glu Leu Gly Leu Ala Leu Ala Gly Ala Val
 20 25 30
 Ser Gly Gly Ala Tyr Ala Ala Gly Val Leu Asp Phe Phe Tyr Glu Ala
 35 40 45
 Leu Glu His Trp Tyr Glu Ala Arg Glu Ala Gly Ala Pro Val Pro Asn
 50 55 60
 His Asp Val Leu Leu Arg Ile Ile Ser Gly Ala Ser Ala Gly Ser Ile
 65 70 75 80
 Asn Gly Val Leu Ser Gly Ile Ala Leu Pro Tyr Arg Phe Pro His Val
 85 90 95

His	Ser	Gly	Pro	Ala	Pro	Glu	Gly	Ala	Thr	Gly	Asn	Pro	Phe	Tyr	Asp		
			100					105					110				
Ala	Trp	Val	Lys	Arg	Ile	Asp	Val	Arg	Glu	Leu	Leu	Gly	Asn	Glu	Asp		
		115					120					125					
Leu	Ala	Asp	Pro	Thr	Gln	Pro	Val	Ala	Ser	Leu	Leu	Asp	Ala	Thr	Cys		
		130				135					140						
Leu	Asp	Thr	Ile	Ala	Lys	Asp	Met	Leu	Gly	Phe	Ser	Ala	Ala	Pro	Ala		
145					150					155					160		
Thr	Arg	Pro	Tyr	Val	Ala	Asn	Pro	Leu	Lys	Cys	Val	Phe	Thr	Val	Thr		
				165					170						175		
Asn	Leu	Arg	Gly	Val	Pro	Tyr	Val	Val	Gln	Phe	Lys	Gly	Asn	Pro	Glu		
			180					185					190				
Ile	Pro	Gly	His	Gly	Met	Met	Ala	His	Ala	Asp	Trp	Leu	Arg	Phe	Ala		
		195					200					205					
Val	Asp	Thr	Gly	Gln	Gly	Asp	Arg	Asp	Gly	Glu	Trp	Met	Phe	Pro	Asp		
		210				215					220						
Glu	Arg	Leu	Val	Ser	Gly	Pro	Ser	His	Ala	Arg	Thr	Pro	Ala	Trp	Gln		
225					230					235					240		
Gly	Phe	Met	Glu	Ala	Ala	Leu	Ala	Ser	Ser	Ala	Phe	Pro	Ala	Gly	Leu		
				245				250						255			
Arg	Phe	Arg	Glu	Val	Ala	Arg	Pro	Trp	Ser	Asp	Tyr	Asp	Gln	Arg	Val		
			260					265					270				
Val	Val	Val	Pro	Asn	Gln	Ala	Gly	Ala	Ala	Val	Pro	Val	Pro	Leu	Pro		
		275					280					285					
Pro	Ala	Trp	Ala	Glu	Gly	Glu	Gly	Ser	Asp	Gly	Asp	Tyr	Arg	Phe	Val		
		290				295				300							
Ala	Val	Asp	Gly	Gly	Ala	Met	Asp	Asn	Glu	Pro	Phe	Glu	Leu	Ala	Arg		
305					310					315					320		
Thr	Glu	Leu	Ala	Gly	Thr	Leu	Gly	Arg	Asn	Pro	Arg	Glu	Gly	Asn	Arg		
				325				330						335			
Val	Asn	Arg	Ile	Val	Ile	Met	Leu	Asp	Pro	Phe	Pro	Glu	Ala	Glu	Ala		
			340				345					350					
Pro	Gly	Pro	Ala	Glu	Ala	Ala	Ser	Thr	Asn	Leu	Val	Glu	Ala	Met	Ala		
		355					360					365					
Ser	Leu	Phe	Gly	Ala	Trp	Lys	Gln	Gln	Ala	Arg	Phe	Lys	Pro	Glu	Glu		
		370				375					380						
Val	Ala	Leu	Ala	Leu	Asp	Ser	Thr	Val	Tyr	Ser	Arg	Phe	Met	Ile	Ala		
385					390					395					400		
Pro	Ser	Arg	Pro	Cys	Met	Glu	Gly	Gly	Pro	Arg	Trp	Ile	Gly	Gly	Arg		
				405					410					415			
Ala	Leu	Ala	Ala	Gly	Ala	Leu	Gly	Gly	Phe	Ser	Gly	Phe	Leu	Ala	Glu		
			420				425						430				
Ala	Tyr	Arg	His	His	Asp	Phe	Leu	Leu	Gly	Arg	Arg	Asn	Cys	Gln	Arg		
		435					440					445					
Phe	Leu	Ala	Glu	Arg	Leu	Leu	Ile	Pro	Ala	Asp	Asn	Pro	Ile	Phe	Ala		
		450				455					460						
Gly	Trp	Ile	Asp	Asp	Pro	Ser	Leu	Gln	Gly	Tyr	Ile	Arg	Glu	Ile	Asp		
465					470					475					480		
Gly	Val	Arg	Tyr	Ala	Pro	Val	Ile	Pro	Leu	Val	Gly	Gly	Cys	Gln	Gly		
				485				490						495			
Leu	Arg	Glu	Pro	Leu	Pro	Thr	Trp	Pro	Arg	Gly	Ala	Phe	Asp	Leu	Asp		
			500					505				510					
Ser	Leu	Met	Pro	Leu	Val	Glu	Arg	Arg	Met	Gln	Arg	Leu	Tyr	Ser	Ala		
		515					520					525					
Ala	Thr	Ala	Thr	Leu	Gly	Gly	Arg	Phe	Ala	Thr	Trp	Leu	Ala	Trp	Arg		
		530				535					540						
Phe	Tyr	Leu	Arg	Arg	Lys	Leu	Leu	Asp	Leu	Val	Ser	Ser	Arg	Ile	Arg		
545					550					555					560		
Ser	Ala	Leu	Arg	Asp	Phe	Gly	Leu	Trp									

<210> 127
 <211> 1038
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 127
 atgacaaccc aatttagaaa cttgatcttt gaaggtggtg gtgtaaaagg agttgcttac 60
 attggcgcca tgcagattct tgaaaatcgt ggcgtgttgc aagatattca ccgagtcgga 120
 ggttgacagt ccggtgcgat taacgcgctg atttttgcgc tgggttacac gggttcgtgag 180
 caaaaagaga tcttacaagc caccgatttt aaccagttta tggataactc ttgggggggtt 240
 attcgtgata ttcgcaggct tgctcgagac tttggctgga ataaggggtg cttctttaat 300
 agctggatag gtgatttgat tcatcgtcgt ttgggggaat gccgagcgac gttcaaggat 360
 ctgcaaaagg ccaagcttcc tgatctttat gtcacggtg ctaatctgtc tacagggttt 420
 gcagaggttt tttctgccga aagacacccc gatattggag tagcgacagc ggtgcgcac 480
 tccatgtcga taccgctgtt ctttgcgccg gtgcgccacg gtgatcgaca agatgtgtat 540
 gtcgatggag gtgttcaact taactatccg attaaactgt ttgatcgga gcgttatatt 600
 gatctggcca aagatcccgg tgccgttcgg cgaacgggtt attacaataa agaaaacgct 660
 cgctttcagc ttgaacggcc gggccatagc ccctatgttt acaatcgcca gacctgggt 720
 ttgcgactgg atagtcgaga ggagataggg ctttttcgtt atgacgaacc cctcaagggc 780
 aaaccgatta agtccttcac tgactacgct cgacaacttt teggtgcgtt gatgaatgcg 840
 caggaaaaca ttcacttaca tggcgatgat tggcagcgca cggctctatat cgacacactg 900
 gatgtgagta cgacggactt caatctttct gatgcaacca agcaagcact gattgagcaa 960
 ggaattaacg gcaccgaaaa ttatttcgag tggtttgata atccggttaga gaagcctgtg 1020
 aatagagtgg agtcatag 1038

<210> 128
 <211> 345
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> DOMAIN
 <222> (8)...(195)
 <223> Patatin-like phospholipase

<400> 128
 Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
 1 5 10 15
 Gly Val Ala Tyr Ile Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
 20 25 30
 Leu Gln Asp Ile His Arg Val Gly Gly Cys Ser Ala Gly Ala Ile Asn
 35 40 45
 Ala Leu Ile Phe Ala Leu Gly Tyr Thr Val Arg Glu Gln Lys Glu Ile
 50 55 60
 Leu Gln Ala Thr Asp Phe Asn Gln Phe Met Asp Asn Ser Trp Gly Val
 65 70 75 80
 Ile Arg Asp Ile Arg Arg Leu Ala Arg Asp Phe Gly Trp Asn Lys Gly
 85 90 95
 Gly Phe Phe Asn Ser Trp Ile Gly Asp Leu Ile His Arg Arg Leu Gly
 100 105 110
 Asn Arg Arg Ala Thr Phe Lys Asp Leu Gln Lys Ala Lys Leu Pro Asp
 115 120 125

Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ala Glu Val Phe
 130 135 140
 Ser Ala Glu Arg His Pro Asp Met Glu Leu Ala Thr Ala Val Arg Ile
 145 150 155 160
 Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Val Arg His Gly Asp Arg
 165 170 175
 Gln Asp Val Tyr Val Asp Gly Gly Val Gln Leu Asn Tyr Pro Ile Lys
 180 185 190
 Leu Phe Asp Arg Glu Arg Tyr Ile Asp Leu Ala Lys Asp Pro Gly Ala
 195 200 205
 Val Arg Arg Thr Gly Tyr Tyr Asn Lys Glu Asn Ala Arg Phe Gln Leu
 210 215 220
 Glu Arg Pro Gly His Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
 225 230 235 240
 Leu Arg Leu Asp Ser Arg Glu Glu Ile Gly Leu Phe Arg Tyr Asp Glu
 245 250 255
 Pro Leu Lys Gly Lys Pro Ile Lys Ser Phe Thr Asp Tyr Ala Arg Gln
 260 265 270
 Leu Phe Gly Ala Leu Met Asn Ala Gln Glu Asn Ile His Leu His Gly
 275 280 285
 Asp Asp Trp Gln Arg Thr Val Tyr Ile Asp Thr Leu Asp Val Ser Thr
 290 295 300
 Thr Asp Phe Asn Leu Ser Asp Ala Thr Lys Gln Ala Leu Ile Glu Gln
 305 310 315 320
 Gly Ile Asn Gly Thr Glu Asn Tyr Phe Glu Trp Phe Asp Asn Pro Leu
 325 330 335
 Glu Lys Pro Val Asn Arg Val Glu Ser
 340 345

<210> 129

<211> 1434

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample

<400> 129

atgaaaaaga	aaatatgtac	attggctctt	gtatcagcaa	taacttctgg	agttgtgacg	60
attccaacgg	tagcatctgc	ttgcagaata	ggcgaagaag	taatgaaaca	ggagaaacag	120
gataatcaag	agcacaaacg	tgtgaaaaga	tggtctgcgg	agcatccgca	tcaattcta	180
gaaagcacgc	acttatggat	tgctcgaaat	gcgattcaaa	ttatgagtcg	taatcaagat	240
aacacggtcc	aaaacaatga	attacagttc	ttaaatattc	ctgaatataa	ggagttattt	300
gaaagaggac	tttatgatgc	tgattacctt	gatgaattta	acgatggcgg	tacaggtaca	360
atcggcattg	atgggcta	ttaaaggagg	tggaatctc	atttttatga	tccagatacg	420
aaaaagaatt	ataaaggaga	agaagctcca	acagccctta	cgcaaggaga	taaatatttt	480
aaattagcag	gagactattt	taagaaagag	gatttgaaac	aagctttcta	ctatttaggt	540
gttgcgactc	actatttcac	agatgctact	cagccaatgc	atgctgctaa	ttttacagct	600
gtcgacatga	gtgcgataaa	gtttcatagc	gcttttgaaa	attatgtaac	gacaattcag	660
acgccatttg	aagtgaagga	tgataaagga	acctataatt	tggttgattc	taatgatccg	720
aagcagtgga	tacatgaaac	agcgaaactc	gcaaaagcgg	aaattatgaa	tattactaat	780
gatactatta	aatctcaata	taataaaggg	aacaatgatc	tttggaaca	aggagttag	840
ccagctgttc	agataagtc	ggaaacagca	caaaggaaca	cggcaggatt	tattcattta	900
tggttttaaaa	catatgttgg	caaaactgct	gctgaagata	ttgaaaatac	acaagtaaaa	960
gattctaacg	gagaagcaat	acaagaaaat	aaaaaatact	acgttgtagc	gagtgagttt	1020
ttaaatagag	gtttgacctt	tgaggtatat	gctgcaaatg	actacgcact	attagcta	1080
cacgtagatg	ataataaagt	tcatggtaca	cctgttcagt	ttgtttttga	taaagacaat	1140
aacggaattc	ttcatcgggg	agaaagtgca	ctgatgaaaa	tgacgcaatc	taactatgct	1200
gattatgtat	ttctcaatta	ctctaatatg	acaaattggg	tacatcttgc	gaaacgaaaa	1260

acaaatactt	cacagtttaa	agtgtatcca	aatccggata	actcatctga	atattttctta	1320
tatacagatg	gatacccggt	aaattatcaa	gaaaatggta	acggaaagag	ctggattgtg	1380
ttaggaaaga	aaacggataa	accaaaaagcg	tggaatttta	tacaggcgga	ataa	1434

<210> 130
 <211> 477
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(27)

<221> DOMAIN
 <222> (1)...(307)
 <223> Zinc dependent phospholipase C

<400> 130

Met	Lys	Lys	Lys	Ile	Cys	Thr	Leu	Ala	Leu	Val	Ser	Ala	Ile	Thr	Ser
1				5					10				15		
Gly	Val	Val	Thr	Ile	Pro	Thr	Val	Ala	Ser	Ala	Cys	Arg	Ile	Gly	Glu
			20					25					30		
Glu	Val	Met	Lys	Gln	Glu	Lys	Gln	Asp	Asn	Gln	Glu	His	Lys	Arg	Val
		35					40					45			
Lys	Arg	Trp	Ser	Ala	Glu	His	Pro	His	His	Ser	Asn	Glu	Ser	Thr	His
	50					55					60				
Leu	Trp	Ile	Ala	Arg	Asn	Ala	Ile	Gln	Ile	Met	Ser	Arg	Asn	Gln	Asp
65					70					75				80	
Asn	Thr	Val	Gln	Asn	Asn	Glu	Leu	Gln	Phe	Leu	Asn	Ile	Pro	Glu	Tyr
			85						90					95	
Lys	Glu	Leu	Phe	Glu	Arg	Gly	Leu	Tyr	Asp	Ala	Asp	Tyr	Leu	Asp	Glu
		100					105						110		
Phe	Asn	Asp	Gly	Gly	Thr	Gly	Thr	Ile	Gly	Ile	Asp	Gly	Leu	Ile	Lys
		115					120					125			
Gly	Gly	Trp	Lys	Ser	His	Phe	Tyr	Asp	Pro	Asp	Thr	Lys	Lys	Asn	Tyr
	130					135					140				
Lys	Gly	Glu	Glu	Ala	Pro	Thr	Ala	Leu	Thr	Gln	Gly	Asp	Lys	Tyr	Phe
145					150					155					160
Lys	Leu	Ala	Gly	Asp	Tyr	Phe	Lys	Lys	Glu	Asp	Leu	Lys	Gln	Ala	Phe
			165						170					175	
Tyr	Tyr	Leu	Gly	Val	Ala	Thr	His	Tyr	Phe	Thr	Asp	Ala	Thr	Gln	Pro
		180						185					190		
Met	His	Ala	Ala	Asn	Phe	Thr	Ala	Val	Asp	Met	Ser	Ala	Ile	Lys	Phe
		195					200					205			
His	Ser	Ala	Phe	Glu	Asn	Tyr	Val	Thr	Thr	Ile	Gln	Thr	Pro	Phe	Glu
	210					215					220				
Val	Lys	Asp	Asp	Lys	Gly	Thr	Tyr	Asn	Leu	Val	Asp	Ser	Asn	Asp	Pro
225					230					235					240
Lys	Gln	Trp	Ile	His	Glu	Thr	Ala	Lys	Leu	Ala	Lys	Ala	Glu	Ile	Met
			245						250					255	
Asn	Ile	Thr	Asn	Asp	Thr	Ile	Lys	Ser	Gln	Tyr	Asn	Lys	Gly	Asn	Asn
		260						265					270		
Asp	Leu	Trp	Gln	Gln	Gly	Val	Met	Pro	Ala	Val	Gln	Arg	Ser	Leu	Glu
		275					280					285			
Thr	Ala	Gln	Arg	Asn	Thr	Ala	Gly	Phe	Ile	His	Leu	Trp	Phe	Lys	Thr
	290					295					300				
Tyr	Val	Gly	Lys	Thr	Ala	Ala	Glu	Asp	Ile	Glu	Asn	Thr	Gln	Val	Lys

305					310					315					320
Asp	Ser	Asn	Gly	Glu	Ala	Ile	Gln	Glu	Asn	Lys	Lys	Tyr	Tyr	Val	Val
				325					330					335	
Pro	Ser	Glu	Phe	Leu	Asn	Arg	Gly	Leu	Thr	Phe	Glu	Val	Tyr	Ala	Ala
			340					345					350		
Asn	Asp	Tyr	Ala	Leu	Leu	Ala	Asn	His	Val	Asp	Asp	Asn	Lys	Val	His
		355					360					365			
Gly	Thr	Pro	Val	Gln	Phe	Val	Phe	Asp	Lys	Asp	Asn	Asn	Gly	Ile	Leu
	370					375					380				
His	Arg	Gly	Glu	Ser	Ala	Leu	Met	Lys	Met	Thr	Gln	Ser	Asn	Tyr	Ala
385					390					395					400
Asp	Tyr	Val	Phe	Leu	Asn	Tyr	Ser	Asn	Met	Thr	Asn	Trp	Val	His	Leu
			405					410						415	
Ala	Lys	Arg	Lys	Thr	Asn	Thr	Ser	Gln	Phe	Lys	Val	Tyr	Pro	Asn	Pro
			420					425					430		
Asp	Asn	Ser	Ser	Glu	Tyr	Phe	Leu	Tyr	Thr	Asp	Gly	Tyr	Pro	Val	Asn
		435					440					445			
Tyr	Gln	Glu	Asn	Gly	Asn	Gly	Lys	Ser	Trp	Ile	Val	Leu	Gly	Lys	Lys
	450					455					460				
Thr	Asp	Lys	Pro	Lys	Ala	Trp	Lys	Phe	Ile	Gln	Ala	Glu			
465					470					475					

<210> 131
 <211> 927
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 131	
atgccgagcc caaaaagtaa tattgatgtt atcagcatcg atggtggtgg aatacgtgga	60
gtattctccg ttacattatt ggatagatta tgtaagacct atcccaatct tcttaagaaa	120
acatatctgt ttgctggaac atctacaggt gggatcattg ccttaggatt agcaaacaac	180
atgacacctc ttgagataag agccttgtac gagaagaacg gttcaaagat atttcataaa	240
tctgtgtggg aaggcgtaa agatttaggt ggaaccatag gtgcaaagta tagtaacaag	300
aatcttaaat ccgttttgaa aaaatacttt gggttcattga agttaaaaga tttatctaaa	360
aaagtactaa tacctacttt tgattttacac tcagacaaag aagaaggcta tccaatgtgg	420
aagcctaagt tctatcacia ctttgatgga gaaacggaag atatagaaaa gctcgttctt	480
gatgtagcta tgatgacatc agcagcgcgc actttcttcc ctacatacaa cgggcatatt	540
gatggcgggtg ttgtagccaa caatccatcg atggccgcat tagcccagat tatggatgaa	600
agatatggca tcaatgcctc tgaagttcat attcttaata taggaacagg ttttaaccct	660
gcttatgtta agatgaatcc aggggaagag aaagactggg gtgaacttca gtggataaaa	720
cctttaatca atcttctagt cgatggctct atggatgttt ctacttatta ttgtaagcaa	780
gtcttacgtg ataattttta tagggttaac atgaaattac ctaagaacgt agaaatggat	840
gatacctaatt ctattccetta ttttaattgaa cttgcaaact cagttgatct aactgaatgt	900
atcaactggc ttaattcgag gtggttaa	927

<210> 132
 <211> 308
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> DOMAIN
 <222> (11)...(194)
 <223> Patatin-like phospholipase

<400> 132

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Met Pro Ser Pro Lys Ser Asn Ile Asp Val Ile Ser Ile Asp Gly Gly
 1          5          10          15
Gly Ile Arg Gly Val Phe Ser Val Thr Leu Leu Asp Arg Leu Cys Lys
 20          25          30
Thr Tyr Pro Asn Leu Leu Lys Lys Thr Tyr Leu Phe Ala Gly Thr Ser
 35          40          45
Thr Gly Gly Ile Ile Ala Leu Gly Leu Ala Asn Asn Met Thr Pro Leu
 50          55          60
Glu Ile Arg Ala Leu Tyr Glu Lys Asn Gly Ser Lys Ile Phe His Lys
 65          70          75          80
Ser Val Trp Glu Gly Val Lys Asp Leu Gly Gly Thr Ile Gly Ala Lys
 85          90          95
Tyr Ser Asn Lys Asn Leu Lys Ser Val Leu Lys Lys Tyr Phe Gly Ser
100          105          110
Leu Lys Leu Lys Asp Leu Ser Lys Lys Val Leu Ile Pro Thr Phe Asp
115          120          125
Leu His Ser Asp Lys Glu Glu Gly Tyr Pro Met Trp Lys Pro Lys Phe
130          135          140
Tyr His Asn Phe Asp Gly Glu Thr Glu Asp Ile Glu Lys Leu Val Leu
145          150          155          160
Asp Val Ala Met Met Thr Ser Ala Ala Pro Thr Phe Phe Pro Thr Tyr
165          170          175
Asn Gly His Ile Asp Gly Gly Val Val Ala Asn Asn Pro Ser Met Ala
180          185          190
Ala Leu Ala Gln Ile Met Asp Glu Arg Tyr Gly Ile Asn Ala Ser Glu
195          200          205
Val His Ile Leu Asn Ile Gly Thr Gly Phe Asn Pro Ala Tyr Val Lys
210          215          220
Met Asn Pro Gly Glu Glu Lys Asp Trp Gly Glu Leu Gln Trp Ile Lys
225          230          235          240
Pro Leu Ile Asn Leu Val Asp Gly Ser Met Asp Val Ser Thr Tyr
245          250          255
Tyr Cys Lys Gln Val Leu Arg Asp Asn Phe Tyr Arg Val Asn Met Lys
260          265          270
Leu Pro Lys Asn Val Glu Met Asp Asp Pro Asn Ser Ile Pro Tyr Leu
275          280          285
Ile Glu Leu Ala Asn Ser Val Asp Leu Thr Glu Cys Ile Asn Trp Leu
290          295          300
Asn Ser Arg Trp
305

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<210> 133

<211> 1053

<212> DNA

<213> Unknown

<220>

<223> Obtained from an environmental sample

<400> 133

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atgactacac agtttcgcaa tctcgttttc gaaggaggcg gcgtcagggg tatagcctat      60
gtgggggcaa tgcaggttct tgagcaacgg ggaatgctca ggaacataga ccgtgcaggc      120
ggcacgagcg ccggtgcat taacgcactc atcttttcac tcggctatga cataaggtct      180
cagctcgaat tactccattc taccgacttt agaaatttta tggatagttc cttcgggata      240
atcaggggata tccgccgtct tgcacgggat ttcggatggg acaagggtga tttcttcaca      300
ggctggattg gcaagcttat aaaagacagg ctcggtagcg agaaagcaac tttccgtgac      360
cttgcagaat cagattgtcc cgatctgtat gtgatcggca ccaacctctc aaccggcttc      420

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gccgaggtat tctcagccga gagacatccc gatatgcctc ttgcaacggc tgtccgtatc 480
agcatgtcga tccctctatt ttttgctgca atgcgttatg gtccgagggg agacgtatct 540
gtagacgggtg gggtagtact caactatcct gtaaagctgt ttgacagggt gaaatacatt 600
gaaagcgggg agacggagga agccgcacgc tataccgaat attataacag ggagaacgca 660
cggttccttc tcaaaagtcc cgaccgcagt ccctatgttt ataaccgtca gacactgggt 720
ttgcgtctcg atacgcgtga ggagattgca catttccgtt atgacgagcc cctggagggt 780
aaaaaaatca tacgctttac ggattatgca cgggcactcg tttcaacctt gcttcagggt 840
caggaaaacc agcatctgca cagtgcgcac tggcagcgta cagtttacat tgacacactg 900
gatgtgaaga cgactgattt tgatatcacg gataagcaga aggacatcct gataaagcag 960
ggaattaacg gagcggagaa ctatttgggt tggtttgaag acccgtatga aaaacccgcc 1020
aaccgcctgc ccggtggcag caagtctgac tga 1053

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<210> 134
 <211> 350
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> DOMAIN
 <222> (8)...(195)
 <223> Patatin-like phospholipase

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<400> 134
Met Thr Thr Gln Phe Arg Asn Leu Val Phe Glu Gly Gly Gly Val Arg
1      5      10      15
Gly Ile Ala Tyr Val Gly Ala Met Gln Val Leu Glu Gln Arg Gly Met
20     25     30
Leu Arg Asn Ile Asp Arg Ala Gly Gly Thr Ser Ala Gly Ala Ile Asn
35     40     45
Ala Leu Ile Phe Ser Leu Gly Tyr Asp Ile Arg Ser Gln Leu Glu Ile
50     55     60
Leu His Ser Thr Asp Phe Arg Asn Phe Met Asp Ser Ser Phe Gly Ile
65     70     75     80
Ile Arg Asp Ile Arg Arg Leu Ala Arg Asp Phe Gly Trp Tyr Lys Gly
85     90     95
Asp Phe Phe Thr Gly Trp Ile Gly Lys Leu Ile Lys Asp Arg Leu Gly
100    105    110
Ser Glu Lys Ala Thr Phe Arg Asp Leu Ala Glu Ser Asp Cys Pro Asp
115    120    125
Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ala Glu Val Phe
130    135    140
Ser Ala Glu Arg His Pro Asp Met Pro Leu Ala Thr Ala Val Arg Ile
145    150    155    160
Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Met Arg Tyr Gly Pro Arg
165    170    175
Glu Asp Val Phe Val Asp Gly Gly Val Val Leu Asn Tyr Pro Val Lys
180    185    190
Leu Phe Asp Arg Leu Lys Tyr Ile Glu Ser Gly Glu Thr Glu Glu Ala
195    200    205
Ala Arg Tyr Thr Glu Tyr Tyr Asn Arg Glu Asn Ala Arg Phe Leu Leu
210    215    220
Lys Ser Pro Asp Arg Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
225    230    235    240
Leu Arg Leu Asp Thr Arg Glu Glu Ile Ala His Phe Arg Tyr Asp Glu
245    250    255
Pro Leu Glu Gly Lys Lys Ile Ile Arg Phe Thr Asp Tyr Ala Arg Ala
260    265    270

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Leu	Val	Ser	Thr	Leu	Leu	Gln	Val	Gln	Glu	Asn	Gln	His	Leu	His	Ser
		275					280					285			
Asp	Asp	Trp	Gln	Arg	Thr	Val	Tyr	Ile	Asp	Thr	Leu	Asp	Val	Lys	Thr
	290					295					300				
Thr	Asp	Phe	Asp	Ile	Thr	Asp	Lys	Gln	Lys	Asp	Ile	Leu	Ile	Lys	Gln
305					310					315					320
Gly	Ile	Asn	Gly	Ala	Glu	Asn	Tyr	Leu	Gly	Trp	Phe	Glu	Asp	Pro	Tyr
			325						330					335	
Glu	Lys	Pro	Ala	Asn	Arg	Leu	Pro	Gly	Gly	Ser	Lys	Ser	Asp		
			340					345					350		

<210> 135
 <211> 1710
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 135

atggetgaca	acgagttacc	cctggccccgc	cccagggaaa	cccctccgtg	ccgtcccggc	60
acgttcgagc	tggggctggc	gctcgccggc	gcggtatcgg	gcggcgcccta	cgccgcgggc	120
gtgctggatt	tcttctacga	ggcgctggag	cactgggtacg	acgcgaaggc	gaacgggtgcg	180
cccgtgccga	gccacgacgt	gctgctacgg	atcatttcag	gcgcctccgc	gggcagcatc	240
aacggcgtgc	tttccggcat	cgcgttgccg	taccgcttcc	cgcacgtgca	cagcggaccc	300
gcgccccggc	aggcgacggg	aaaccccttc	tacgacgcgt	gggtgaggcg	catcgatgta	360
cgcgagctgc	tgggcgaggg	cgacctggct	aaccgcggcg	ggccgatcac	ctcgctgctt	420
gattccagca	gcctggatac	gatcgcgaa	gacatgctcg	gctacgcggg	cgtgccggcc	480
gcgcgccctt	acatcgcgaa	cccgtgaaa	tgcgtgttca	ccgtgacgaa	tcttcgcggc	540
gtgccctacg	tggtgcagtt	caagggcaac	cccagatttc	ccggccacgg	catgatggcg	600
cacgccgatt	ggctgcgctt	cgccatcgac	tcggggcagg	gcgaacgcga	tggcgcatgg	660
atgttccccg	acgagcgcgt	cgtcagcggc	ccgagccatg	cgcgcagccc	ggcctggcat	720
gcgctcatgg	aggcggccct	ggcgctcgcc	gcgttcccgg	ccggcctgcg	cttccgcgag	780
gtggcccggc	cgtggagcga	ttacgaccag	cgcgtggttg	tcgtgcccgg	tcaggatggc	840
atggcgggtg	cgtaccgct	gccaccagcg	tggggcgaa	gggaggggtg	gaagggcgac	900
taccgctttg	tcgccgtgga	tggtggcgcc	atggataacg	aaccgttcga	gctggcccgc	960
acggagcttg	cgggcacgat	gggcccgaac	ccgcgtgaag	gtaccggggt	gaatcgtatc	1020
gtgattatgc	tcgatccggt	tccggaggcc	gaggcgcccg	gcccctcgga	ggcggcgctc	1080
acgaacctgg	tggaagcgat	ggcgtcgctg	ttcggtgcat	ggaagcagca	ggcgcggttc	1140
aagcccaggg	aagtggcgct	ggccctcgat	agcacggtgt	acagccgctt	catgatcgcg	1200
cctagccggc	cctgcacgga	tggcggcccc	cggtggatcg	gcggccgcgc	gctcaccgcg	1260
ggcgcaactg	gtggcttctc	ggggttccct	gccgaggatt	accgccacca	cgatttcctc	1320
ctgggcccgg	gtaactgcca	gcggtttctc	gccgagcggc	tgctcgttcc	cgcaacgaac	1380
ccgatcttcg	ctggatggat	cgacgatccc	gcaactgcagg	gctacgtgcg	tgagatcgat	1440
ggtgagcgct	ttgcccccg	gattccccta	gtgggcggct	gccaggccct	gcaagagccc	1500
ttgccggcgt	ggccgcgtgg	ggcgttcgac	atggatgcgc	tcatgcccct	ggtcgagaag	1560
cgcgtgcagg	ccctgtacac	ggcggccacc	acgaagctgg	gtggccgctt	cgccatgtgg	1620
ctcgcgtggc	gcttcttcat	ccgcgcgaaa	ctcctcgaca	tcgtctcaag	ccgtatccgc	1680
aatgcgctga	aagacttcgg	cctttggtga				1710

<210> 136
 <211> 569
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 136

Met	Ala	Asp	Asn	Glu	Leu	Pro	Leu	Ala	Arg	Pro	Arg	Glu	Thr	Pro	Pro	1	5	10	15
Cys	Arg	Pro	Gly	Thr	Phe	Glu	Leu	Gly	Leu	Ala	Leu	Ala	Gly	Ala	Val	20	25	30	
Ser	Gly	Gly	Ala	Tyr	Ala	Ala	Gly	Val	Leu	Asp	Phe	Phe	Tyr	Glu	Ala	35	40	45	
Leu	Glu	His	Trp	Tyr	Asp	Ala	Lys	Ala	Asn	Gly	Ala	Pro	Val	Pro	Ser	50	55	60	
His	Asp	Val	Leu	Leu	Arg	Ile	Ile	Ser	Gly	Ala	Ser	Ala	Gly	Ser	Ile	65	70	75	80
Asn	Gly	Val	Leu	Ser	Gly	Ile	Ala	Leu	Pro	Tyr	Arg	Phe	Pro	His	Val	85	90	95	
His	Ser	Gly	Pro	Ala	Pro	Arg	Gln	Ala	Thr	Gly	Asn	Pro	Phe	Tyr	Asp	100	105	110	
Ala	Trp	Val	Arg	Arg	Ile	Asp	Val	Arg	Glu	Leu	Leu	Gly	Glu	Ala	Asp	115	120	125	
Leu	Ala	Asn	Pro	Ala	Arg	Pro	Ile	Thr	Ser	Leu	Leu	Asp	Ser	Ser	Ser	130	135	140	
Leu	Asp	Thr	Ile	Ala	Lys	Asp	Met	Leu	Gly	Tyr	Ala	Gly	Val	Pro	Ala	145	150	155	160
Ala	Arg	Pro	Tyr	Ile	Ala	Asn	Pro	Leu	Lys	Cys	Val	Phe	Thr	Val	Thr	165	170	175	
Asn	Leu	Arg	Gly	Val	Pro	Tyr	Val	Val	Gln	Phe	Lys	Gly	Asn	Pro	Glu	180	185	190	
Ile	Pro	Gly	His	Gly	Met	Met	Ala	His	Ala	Asp	Trp	Leu	Arg	Phe	Ala	195	200	205	
Ile	Asp	Ser	Gly	Gln	Gly	Glu	Arg	Asp	Gly	Ala	Trp	Met	Phe	Pro	Asp	210	215	220	
Glu	Arg	Ile	Val	Ser	Gly	Pro	Ser	His	Ala	Arg	Ser	Pro	Ala	Trp	His	225	230	235	240
Ala	Leu	Met	Glu	Ala	Ala	Leu	Ala	Ser	Ser	Ala	Phe	Pro	Ala	Gly	Leu	245	250	255	
Arg	Phe	Arg	Glu	Val	Ala	Arg	Pro	Trp	Ser	Asp	Tyr	Asp	Gln	Arg	Val	260	265	270	
Val	Val	Val	Pro	Gly	Gln	Asp	Gly	Met	Ala	Val	Pro	Val	Pro	Leu	Pro	275	280	285	
Pro	Ala	Trp	Gly	Glu	Gly	Glu	Gly	Gly	Lys	Gly	Asp	Tyr	Arg	Phe	Val	290	295	300	
Ala	Val	Asp	Gly	Gly	Ala	Met	Asp	Asn	Glu	Pro	Phe	Glu	Leu	Ala	Arg	305	310	315	320
Thr	Glu	Leu	Ala	Gly	Thr	Met	Gly	Arg	Asn	Pro	Arg	Glu	Gly	Thr	Arg	325	330	335	
Val	Asn	Arg	Ile	Val	Ile	Met	Leu	Asp	Pro	Phe	Pro	Glu	Ala	Glu	Ala	340	345	350	
Pro	Gly	Pro	Ser	Glu	Ala	Ala	Ser	Thr	Asn	Leu	Val	Glu	Ala	Met	Ala	355	360	365	
Ser	Leu	Phe	Gly	Ala	Trp	Lys	Gln	Gln	Ala	Arg	Phe	Lys	Pro	Glu	Glu	370	375	380	
Val	Ala	Leu	Ala	Leu	Asp	Ser	Thr	Val	Tyr	Ser	Arg	Phe	Met	Ile	Ala	385	390	395	400
Pro	Ser	Arg	Pro	Cys	Thr	Asp	Gly	Gly	Pro	Arg	Trp	Ile	Gly	Gly	Arg	405	410	415	
Ala	Leu	Thr	Ala	Gly	Ala	Leu	Gly	Gly	Phe	Ser	Gly	Phe	Leu	Ala	Glu	420	425	430	
Asp	Tyr	Arg	His	His	Asp	Phe	Leu	Leu	Gly	Arg	Arg	Asn	Cys	Gln	Arg	435	440	445	
Phe	Leu	Ala	Glu	Arg	Leu	Leu	Val	Pro	Ala	Thr	Asn	Pro	Ile	Phe	Ala	450	455	460	
Gly	Trp	Ile	Asp	Asp	Pro	Ala	Leu	Gln	Gly	Tyr	Val	Arg	Glu	Ile	Asp				

465 Gly Glu Arg Phe Ala Pro Val Ile Pro Leu Val Gly Gly Cys Gln Ala 480
 470 485 490 495
 Leu Gln Glu Pro Leu Pro Ala Trp Pro Arg Gly Ala Phe Asp Met Asp
 500 505 510
 Ala Leu Met Pro Leu Val Glu Lys Arg Met Gln Ala Leu Tyr Thr Ala
 515 520 525
 Ala Thr Thr Lys Leu Gly Gly Arg Phe Ala Met Trp Leu Ala Trp Arg
 530 535 540
 Phe Phe Ile Arg Arg Lys Leu Leu Asp Ile Val Ser Ser Arg Ile Arg
 545 550 555 560
 Asn Ala Leu Lys Asp Phe Gly Leu Trp 565

<210> 137
 <211> 1038
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 137
 atgacaacac aatttagaaa cttgatattt gaaggcggcg gtgtaaaagg tgttgcttac 60
 attggcgcca tgcagattct tgaaaatcgt ggcgtgttgc aagatattcg ccgagtcgga 120
 ggggtgcagt cgggtgcgat taacgcgctg atttttgctg taggttacac ggtccgtgaa 180
 caaaaagaga tcttacaagc caccgatttt aaccagttta tggataactc ttgggggggtt 240
 attcgtgata ttgcgaggct tgctcgagac tttggctgga ataaggggtga tttcttttagt 300
 agctggatag gtgatttgat tcatcgtcgt ttggggaatc gccgagcgac gttcaaagat 360
 ctgcaaaagg ccaagcttcc tgatctttat gtcacgcgta ctaatctgtc tacagggttt 420
 gcagagggtgt tttctgccga aagacacccc gatattggagc tggcgacagc ggtgcgtatc 480
 tccatgtcga taccgctgtt ctttgcggcc gtgcgtcacg gtgatcgaca agatgtgtat 540
 gtcgatgggg gtgttcaact taactatccg attaaactgt ttgatcgga gcgttacatt 600
 gatttggcca aagatcccgg tgccgttcgg cgaacgggtt attacaacaa agaaaacgct 660
 cgcttttcagc ttgatcgccc gggccatagc ccctatgttt acaatcgcca gaccttgggt 720
 ttgcgactgg atagtcgcga ggagataggg ctctttcgtt atgacgaacc cctcaagggc 780
 aaaccattta agtccttcac tgactacgct cgacaacttt tcggtgcgtt gatgaatgca 840
 cagggaaaaga ttcacttaca tggcgatgat tggcaacgca cgatctatat cgatacattg 900
 gatgtgggta cgacggactt caatctttct gatgcaacta agcaagcact gattgagcaa 960
 ggaattaacg gcaccgaaaa ttatttcgag tggtttgata atccgttaga gaagcctgtg 1020
 aatagagtgg agtcatag 1038

<210> 138
 <211> 345
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> DOMAIN
 <222> (8)...(195)
 <223> Patatin-like phospholipase

<400> 138
 Met Thr Thr Gln Phe Arg Asn Leu Ile Phe Glu Gly Gly Gly Val Lys
 1 5 10 15
 Gly Val Ala Tyr Ile Gly Ala Met Gln Ile Leu Glu Asn Arg Gly Val
 20 25 30

Leu Gln Asp Ile Arg Arg Val Gly Gly Cys Ser Ala Gly Ala Ile Asn
 35 40 45
 Ala Leu Ile Phe Ala Leu Gly Tyr Thr Val Arg Glu Gln Lys Glu Ile
 50 55 60
 Leu Gln Ala Thr Asp Phe Asn Gln Phe Met Asp Asn Ser Trp Gly Val
 65 70 75 80
 Ile Arg Asp Ile Arg Arg Leu Ala Arg Asp Phe Gly Trp Asn Lys Gly
 85 90 95
 Asp Phe Phe Ser Ser Trp Ile Gly Asp Leu Ile His Arg Arg Leu Gly
 100 105 110
 Asn Arg Arg Ala Thr Phe Lys Asp Leu Gln Lys Ala Lys Leu Pro Asp
 115 120 125
 Leu Tyr Val Ile Gly Thr Asn Leu Ser Thr Gly Phe Ala Glu Val Phe
 130 135 140
 Ser Ala Glu Arg His Pro Asp Met Glu Leu Ala Thr Ala Val Arg Ile
 145 150 155 160
 Ser Met Ser Ile Pro Leu Phe Phe Ala Ala Val Arg His Gly Asp Arg
 165 170 175
 Gln Asp Val Tyr Val Asp Gly Gly Val Gln Leu Asn Tyr Pro Ile Lys
 180 185 190
 Leu Phe Asp Arg Glu Arg Tyr Ile Asp Leu Ala Lys Asp Pro Gly Ala
 195 200 205
 Val Arg Arg Thr Gly Tyr Tyr Asn Lys Glu Asn Ala Arg Phe Gln Leu
 210 215 220
 Asp Arg Pro Gly His Ser Pro Tyr Val Tyr Asn Arg Gln Thr Leu Gly
 225 230 235 240
 Leu Arg Leu Asp Ser Arg Glu Glu Ile Gly Leu Phe Arg Tyr Asp Glu
 245 250 255
 Pro Leu Lys Gly Lys Pro Ile Lys Ser Phe Thr Asp Tyr Ala Arg Gln
 260 265 270
 Leu Phe Gly Ala Leu Met Asn Ala Gln Glu Lys Ile His Leu His Gly
 275 280 285
 Asp Asp Trp Gln Arg Thr Ile Tyr Ile Asp Thr Leu Asp Val Gly Thr
 290 295 300
 Thr Asp Phe Asn Leu Ser Asp Ala Thr Lys Gln Ala Leu Ile Glu Gln
 305 310 315 320
 Gly Ile Asn Gly Thr Glu Asn Tyr Phe Glu Trp Phe Asp Asn Pro Leu
 325 330 335
 Glu Lys Pro Val Asn Arg Val Glu Ser
 340 345

<210> 139
 <211> 1692
 <212> DNA
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<400> 139
 atgaaaataa agcgcgtcac gttttctttt ggattagcag tcactagctc ggtgcaagcc 60
 ttcactcaat ttggcggaca aggcgttatg ccgatgggtc acgaatgggt aacgcgcacc 120
 gctgctctcg aggtacttaa tgcagagcat atcatcgaag cggatccgaa tgaccaaga 180
 tatacttggc aggacggact tgctaaaaac cttgaactta ataccgcca atctgaaatc 240
 acgcgcttac aatctcattt aaataataac ccgctctatg agccgagata cgacggtata 300
 aactcagcca tcgttggtga acgctgggtc gatattgcag ggtttaacgt cacaacagcc 360
 agcgcagacc cgactggccc taattgcttt agcgcagttt cacaagagcc cgcatatatt 420
 cagcaagacc actttatgcg ccgctatgat gatattggag gtcaaggtgg agttgatgct 480
 gcttatcgcg cacagcaacg atttgtgcaa cactttgtgg atgcggccat ggccgaaaaa 540

aaacgactaa	aagtatggga	cgggtggtggc	cattctgcgt	tagcagaggt	agatcataat	600
tactttttat	ttggtcgtgc	ggttcaccta	tttcaagact	catttagtcc	agaacacacg	660
gtacggctcc	ctcaagataa	ctacgaaaaa	gtttggcagg	ttaaggcata	tctttgctca	720
gagggggctg	agcaacattc	acacgatacc	aaagacgtgc	tcaactttgc	cagtggcgat	780
gttattttggc	aacctcaaac	ccgactagaa	gcaggctggc	aatcttacca	gatcagcagt	840
atgaagcccg	ttgctattgt	ggcccttgaa	gccagtaaag	atctttgggc	tgcgtttatt	900
cgcaccatgg	cgaccccaaa	agcacagaga	cgtaacgtgg	caacgcaaga	agccaacaa	960
cttgtaaaa	actggttgtc	ttttgatgag	gccagatgc	tgacttggt	tcaagatgag	1020
aataagcgtg	accatactta	tgtgcttgcc	cccaatgaaa	cgggaaaagg	aaaatctctg	1080
gaagcctgta	tgacagagct	aaaggtaggc	actagcagtc	aagcagaacg	ggttgcgcaa	1140
ctggaagccg	agcgtaatca	atgcctatac	aacattgagg	cggaaacctg	ccttgacagac	1200
ttaaaccgatc	cacacctcga	tattccatat	aactggcgct	ggaagtctct	gacttggcaa	1260
acgcctccta	gtggctggac	atacccacaa	ctaaatgcag	ataccggcga	gcaagtcgcc	1320
attaaatcgc	cgataaataa	tcagtatttta	tctgcacaaa	ctctaagtaa	cgacaccccg	1380
atcactctga	gtcaagcaca	tccaattttcc	ttgatccaag	tgacgaatgc	acagggccag	1440
cactattttta	ggagcgctca	agccccttca	ctatttctgg	gttatagcaa	caaaattgca	1500
ggctacctca	agctttaga	ttcacccaag	caagccctat	atacgttgat	ttatcaaggt	1560
ggctctttgga	atatccaaaa	tgaattttgg	caacagtata	tctgggttaa	tcaagacaaa	1620
gagcggccgg	aattaaatcg	ccatgggtgag	cctagccaat	taaacgctca	gtggatggtc	1680
gaacacttat	aa					1692

<210> 140
 <211> 563
 <212> PRT
 <213> Unknown

<220>
 <223> Obtained from an environmental sample

<221> SIGNAL
 <222> (1)...(20)

<400> 140

Met	Lys	Ile	Lys	Pro	Leu	Thr	Phe	Ser	Phe	Gly	Leu	Ala	Val	Thr	Ser
1			5						10					15	
Ser	Val	Gln	Ala	Phe	Thr	Gln	Phe	Gly	Gly	Gln	Gly	Val	Met	Pro	Met
		20						25					30		
Gly	His	Glu	Trp	Leu	Thr	Arg	Thr	Ala	Ala	Leu	Glu	Val	Leu	Asn	Ala
		35					40					45			
Glu	His	Ile	Ile	Glu	Ala	Asp	Pro	Asn	Asp	Pro	Arg	Tyr	Thr	Trp	Gln
	50				55					60					
Asp	Gly	Leu	Ala	Lys	Asn	Leu	Glu	Leu	Asn	Thr	Ala	Gln	Ser	Glu	Ile
	65			70					75					80	
Thr	Arg	Leu	Gln	Ser	His	Leu	Asn	Asn	Asn	Pro	Leu	Tyr	Glu	Pro	Arg
		85						90					95		
Tyr	Asp	Gly	Ile	Asn	Ser	Ala	Ile	Val	Gly	Glu	Arg	Trp	Val	Asp	Ile
		100					105						110		
Ala	Gly	Phe	Asn	Val	Thr	Thr	Ala	Ser	Ala	Asp	Pro	Thr	Gly	Pro	Asn
	115						120					125			
Cys	Phe	Ser	Ala	Val	Ser	Gln	Glu	Pro	Ala	Asp	Ile	Gln	Gln	Asp	His
	130				135					140					
Phe	Met	Arg	Arg	Tyr	Asp	Asp	Ile	Gly	Gly	Gln	Gly	Gly	Val	Asp	Ala
	145				150				155					160	
Ala	Tyr	Arg	Ala	Gln	Gln	Arg	Phe	Val	Gln	His	Phe	Val	Asp	Ala	Ala
		165						170						175	
Met	Ala	Glu	Lys	Lys	Arg	Leu	Lys	Val	Trp	Asp	Gly	Gly	Gly	His	Ser
		180					185						190		
Ala	Leu	Ala	Glu	Val	Asp	His	Asn	Tyr	Phe	Leu	Phe	Gly	Arg	Ala	Val
	195						200					205			

His Leu Phe Gln Asp Ser Phe Ser Pro Glu His Thr Val Arg Leu Pro
 210 215 220
 Gln Asp Asn Tyr Glu Lys Val Trp Gln Val Lys Ala Tyr Leu Cys Ser
 225 230 235 240
 Glu Gly Ala Glu Gln His Ser His Asp Thr Lys Asp Val Leu Asn Phe
 245 250 255
 Ala Ser Gly Asp Val Ile Trp Gln Pro Gln Thr Arg Leu Glu Ala Gly
 260 265 270
 Trp Gln Ser Tyr Gln Ile Ser Ser Met Lys Pro Val Ala Ile Val Ala
 275 280 285
 Leu Glu Ala Ser Lys Asp Leu Trp Ala Ala Phe Ile Arg Thr Met Ala
 290 295 300
 Thr Pro Lys Ala Gln Arg Arg Asn Val Ala Thr Gln Glu Ala Gln Gln
 305 310 315 320
 Leu Val Gln Asn Trp Leu Ser Phe Asp Glu Ala Gln Met Leu Thr Trp
 325 330 335
 Tyr Gln Asp Glu Asn Lys Arg Asp His Thr Tyr Val Leu Ala Pro Asn
 340 345 350
 Glu Thr Gly Lys Gly Lys Ser Leu Glu Ala Cys Met Thr Glu Leu Lys
 355 360 365
 Val Gly Thr Ser Ser Gln Ala Glu Arg Val Ala Gln Leu Glu Ala Glu
 370 375 380
 Arg Asn Gln Cys Leu Tyr Asn Ile Glu Ala Glu Pro Gly Phe Ala Asp
 385 390 395 400
 Leu Asn Asp Pro His Leu Asp Ile Pro Tyr Asn Trp Arg Trp Lys Ser
 405 410 415
 Leu Thr Trp Gln Thr Pro Pro Ser Gly Trp Thr Tyr Pro Gln Leu Asn
 420 425 430
 Ala Asp Thr Gly Glu Gln Val Ala Ile Lys Ser Pro Ile Asn Asn Gln
 435 440 445
 Tyr Leu Ser Ala Gln Thr Leu Ser Asn Asp Thr Pro Ile Thr Leu Ser
 450 455 460
 Gln Ala His Pro Ile Ser Leu Ile Gln Val Thr Asn Ala Gln Gly Gln
 465 470 475 480
 His Tyr Phe Arg Ser Ala Gln Ala Pro Ser Leu Phe Leu Gly Tyr Ser
 485 490 495
 Asn Lys Ile Ala Gly Tyr Leu Lys Leu Val Asp Ser Pro Lys Gln Ala
 500 505 510
 Leu Tyr Thr Leu Ile Tyr Gln Gly Gly Leu Trp Asn Ile Gln Asn Glu
 515 520 525
 Phe Trp Gln Gln Tyr Ile Trp Leu Asn Gln Asp Lys Glu Arg Pro Glu
 530 535 540
 Leu Asn Arg His Gly Glu Pro Ser Gln Leu Asn Ala Gln Trp Met Val
 545 550 555 560
 Glu His Leu